Wood and Traditional Woodworking in Japan

MECHTILD MERTZ

Drawing on in-depth interviews with a wide variety of traditional craftsmen, ethnobotanist and wood anatomist Mechtild Mertz offers illuminating insights into the technical and symbolic properties of Japanese wood. With a first-ever multi-lingual glossary of woodworking terms and an appendix of Japanese timber names, *Wood and Traditional Woodworking in Japan* is certain to become an invaluable resource for woodworkers, art historians, ethnobotanists, archaeologists, and lay people alike.

"Mertz has done an outstanding job of collating an enormous amount of data into a concise and clean format . . . this is an excellent and long-overdue reference book that I would heartily recommend to anyone keen to know more about Japan’s culture of wood."

Douglas Woodruff, “Kyoto Journal”
Second Edition
Wood and Traditional Woodworking in Japan

Mechtild Mertz
Impressive kujaku ("peacock") figuring on a kaki persimmon tray.
(Photo by Cyril Ruoso.)

Length 22.5 cm, width 22.5 cm, height 3.3 cm.
Left: *Kiso-hinoki* cypress forest.
Center: *Akita-sugi* cedar forest.
Right: *Aomori-hiba* forest. (Photo by Yumoto Takakazu.)

Cooked-rice container lid with an expressive *Akita-sugi* cedar straight grain. Diameter 17 cm. By Shibata Yoshinobu. (Photo by Cyril Ruoso.)
Top left: Japanese zelkova (keyaki) with tama (“pearl”) figuring.

Top right: Japanese horse-chestnut (tochinoki) with chijimi (“crepe”) figuring.

Left: Deciduous oak (nara) with torafu (“tiger fleck”) figuring showing medullar rays.

Right: Chôna, curved-handled adze, and Nara-Period hinoki cypress board bearing traces of chôna fashioning.
a: Naka-itame ("central flat-sawn grain") on an Akita-sugi cedar ceiling panel.
b: Naka ("central") figuring on a Yoshino-sugi cedar ceiling panel.
c: Sasa ("bamboo grass") figuring on a Yaku-sugi cedar ceiling panel.
d: Vivid-red grain on a Tosa (or Yanase) sugi cedar ceiling panel.
e: Sasa ("bamboo grass") figuring on a Kirishima-sugi cedar ceiling panel.
f: The earlywood of this Kasuga-sugi cedar ceiling panel is characterized by a reddish tone.
g: Red and white "Genpei" figuring on an Akita-sugi cedar ceiling panel.

(Photos a-g taken by author, with permission of proprietor Nakade Takashi of Izugen Meiboku.)
End grain of a *kurogaki* black persimmon stem.


“Wild geese and moon” incense container made of striped persimmon with white inlay. Length 9.5 cm, width 3.7 cm, height 2.5 cm. By Iguchi Akio. (Photo by Cyril Ruoso.)
Top left: Kijima Toshio, of Gifu Prefecture’s Nagiso Town, splitting a hinoki cypress board.

Top right: Using a spear-headed plane in the reconstruction of the Yakushi-ji Lecture Hall.

Above: Using an uzukuri brush to finish a Japanese cedar surface.

Right: Ayabe Yuki preparing to do object-orientated cutting (kidori) on a keyaki plank.
Top: Ayabe Yuki fashioning a bowl on a rokuro, or lathe.

Left: Eri Kökei carving the hermit Hōdō, founder of Ichijō Temple. (Photo by Kimura Naotatsu.)

Bottom: Shirai Masaharu using cherry-bark strips to sew together the ends of a bentwork ring.
Left: Kočmatsu ("fatty pine") incense container. Diameter 6.8 cm, height 1.8 cm. By Ayabe Yuki.

Center left: Incense container made of tsubaki (Japanese camellia). Height 6.4 cm, diameter 5.7 cm.

Center right: Hearth frame made from the wood of an old apricot tree (ume-koboku). Height 6.6 cm, length 42.4 cm, width 42.4 cm. By Inao Seichûsai. (© Nihon Tokushu Printing.)

Chashaku (tea scoops). Top to bottom: nanten (heavenly bamboo), yamazakura (cherry wood), tsubaki (camellia), and kuwa (mulberry). Length 18 cm, width 1–1.1 cm, thickness 0.2–0.4 cm. By Ayabe Yuki.
Top left: The subdued straight grain of Bishû hinoki cypress is well-suited for this Jizô bosatsu image. Top right: Camphor wood’s more vivid flat-sawn grain is suitable for this statue of a priest. By Eri Kôkei. (Photos by Kimura Naotatsu.)

Left: Stages in the creation of a Nô mask. By Nagasawa Muneharu.

Bottom left: Pentagonal tray made of dark brown, ishibai-treated mulberry wood. By Kawamoto Kôshun. (© Nihon Tokushu Printing.)

Bottom right: Japanese nutmeg (kaya) Go-board with a tenchi-masa “heaven and earth” straight grain. By Kuroda Makoto [Rozan, pseud.], Nagoya.
Foreword by Yumoto Takakazu

The Japanese archipelago extends over 3,000 kilometers from north to south and is comprised of subarctic, cool-temperate, warm-temperate, and subtropical climatic zones. It is evident that these various climatic zones have persisted over the past 100,000 years, in spite of the global environmental changes that have occurred. As a result, the Japanese archipelago’s natural environment and its human subsistence activities have been characterized by great variety, as have its human-nature relationships.

From 2006 to 2011, a collective research project entitled “A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago” was conducted at the Research Institute for Humanity and Nature. Involving more than 130 researchers, including ecologists, anthropologists, geographers, historians, and archeologists, this project’s aim was to reconstruct how human-nature relations have changed, both physically and spiritually, over the course of Japanese history.

Traditional woodcraft is a typical example of a human-nature relationship, one that boasts a long history. It was for this reason that Dr. Mechtild Mertz decided to undertake a study of Japanese wood craftsmanship. Based on in-depth interviews of craftsmen who specialise in various fields of traditional woodworking, her study’s distinctive feature is that it combines a craftsman’s know-how with a scientist’s understanding of wood anatomy. As such, this study offers art historians, ethnobotanists, archaeologists, and Japanologists novel tools and methods to supplement their existing ones and contributes greatly towards opening a new field of research.

Yumoto Takakazu
Project Leader, Professor
Research Institute for Humanity and Nature, Kyôto
Foreword by Itoh Takao

It gives me great pleasure to learn of the Kaiseisha Press publication of Dr. Mechtild Mertz's book.

It was in 1999, while I was a professor at the Wood Research Institute in Uji (Kyôto Prefecture, Japan) that she contacted me and expressed a desire to conduct research in my laboratory on traditional Japanese woodworking.

Just after she joined my laboratory, we decided that the best way of conducting this research would be to visit the ateliers of various traditional woodworkers and to conduct interviews. We submitted a questionnaire to some thirty-five workshops in the Tôhoku, Kantô, Chûbû, and Kinki regions and taped these interviews. We also interviewed craftsmen from other wood-related fields, such as lacquer ware and carpentry.

Fortunately, the woodworkers were very cooperative and willingly gave of their time and energy in answering our questions. These interviews greatly enhanced Dr. Mertz's understanding of the activities of traditional Japanese woodworkers.

Our first trip, in 1999, took us to Hirutani (Eigenji-chô, Shiga Prefecture), which is considered to be the birthplace of Japanese turnery. Dr. Mertz painstakingly took notes and pictures of the craftsmen's work. She proved to have an excellent eye for detail, observing, for example, that the varying widths of the annual rings in some *sugi* (Japanese cedar) bentwork possessed a natural beauty of their own.

The interview tapes and their transcriptions provided the principal source of information for her doctoral thesis. Through them, she came to appreciate just how Japanese woodworkers bring out, by careful selection of wood species and by the use of appropriate techniques, the intrinsic beauty of the wood in their final products.

Although she knew Japanese before joining us, it was not always easy for her to fully understand the interviewees, as many of them were quite aged and spoke in their regional dialects, some of which are difficult for even native Japanese speakers to comprehend. However, Dr. Mertz, a native German speaker enrolled in a French research institute and translating from Japanese into English, persevered and overcame the linguistic challenges. After four years of profound effort, she succeeded in completing her doctoral thesis.

Of all the traditional wooden craft items in Japan, those preserved in the Shôsô-in Imperial Repository represent the ultimate in refinement. Thanks to the skills of the traditional woodworkers who made them, the techniques responsible for their creation, as well as their designs, will endure. I hope this publication will contribute to a greater appreciation of the significance of traditional Japanese woodworking.

Itoh Takao
Professor Emeritus, Kyôto University
Visiting Researcher, Nara National Research Institute for Cultural Properties
Preface to the second edition

On the occasion of the second edition of *Wood and Traditional Woodworking in Japan*, I wish to thank those who pointed out errors and discrepancies in the original edition. The present book has benefited greatly from their kind advice.

I would also like to take this opportunity to announce the impending publication of the Japanese edition of *Wood and Traditional Woodworking in Japan*. Thanks to Hayashi Yumiko’s excellent translation, Japanese woodworkers and fans of Japanese wood and woodcraft will soon be able to enjoy reading about their country’s fascinating ‘wood culture’ in their own language.

Mechtild Mertz
Contents

Foreword by Yumoto Takakazu ................................................................. i
Foreword by Itoh Takao ........................................................................ ii
Preface to the Second Edition ............................................................... iii
Acknowledgements .................................................................................. 1
Notes on typography, chronological table, prefectures and regions of Japan ...................................... 4
INTRODUCTION ......................................................................................... 7

1. WOOD BASICS ...................................................................................... 21
   1.1. Nomenclature of Trees and Timbers .................................................. 21
       1.1.1. Botanical names ........................................................................ 22
       1.1.2. Vernacular names ................................................................. 25
       1.1.3. Timber names ........................................................................ 27
   1.2. Wood Structure .............................................................................. 29
       1.2.1. Gross structure of the tree ...................................................... 29
       1.2.2. Structure of the stem ............................................................ 29
       1.2.3. Microscopic structure of wood .............................................. 31
   1.3. Wood Sections ............................................................................... 32
       1.3.1. Transversal section ............................................................... 32
       1.3.2. Tangential section ............................................................... 33
       1.3.3. Radial section ....................................................................... 33
       1.3.4. Wood figuring ....................................................................... 34
   1.4. Wood Surface ............................................................................... 35
       1.4.1. Grain .................................................................................... 35
       1.4.2. Texture ................................................................................ 36
       1.4.3. Colour ................................................................................ 36
   1.5. Wood Properties ........................................................................... 36
       1.5.1. Density ............................................................................... 38
       1.5.2. Average shrinkage ................................................................ 38
       1.5.3. Seasoning ........................................................................... 39
       1.5.4. Durability ........................................................................... 40
       1.5.5. Cleavability ........................................................................ 40

2. TRADITIONAL WOODWORKING IN JAPAN ...................................... 41
   2.1. Sashimono, Fine Cabinetmaking/Joinery ....................................... 46
   2.2. Horimono/chôkoku, Carving/Sculpture ......................................... 53
   2.3. Hikimono, Turning ...................................................................... 58
3. WOODWORKERS AND WOOD NOMENCLATURE ............................................................ 75

3.1. Japanese Timber Names ............................................................................................. 75
  3.1.1. Wood names with an area-related prefix .............................................................. 76
  3.1.2. Wood names with a characteristic-related prefix ............................................... 80
  3.1.3. Wood names with an age-related prefix .............................................................. 81
  3.1.4. Abbreviated wood names ................................................................................... 81
  3.1.5. Wood names with prefixes denoting foreign wood .............................................. 82

3.2. Tree and Timber Group Names .................................................................................. 83
  3.2.1. Grouping of trees ............................................................................................... 83
    a. Zōki/zatsuboku, common or miscellaneous trees ..................................................... 83
    b. Kiso go-boku, “Five trees of Kiso” ......................................................................... 84
    c. Sacred trees ......................................................................................................... 85
  3.2.2. Timber groupings ............................................................................................... 85
    a. Softwoods and hardwoods .................................................................................... 85
    b. Meiboku, superior-quality wood ........................................................................... 85
    c. Bogwood ............................................................................................................ 86
    d. Wood for Buddhist sculptures .............................................................................. 86
    e. Karaki, Chinawood, and Japanese wood ................................................................. 86
    f. Akamono, red wood .............................................................................................. 87

3.3. Timber Classifications Used by Craftsmen ............................................................... 87

4. TECHNICAL ASPECTS OF TRADITIONAL WOODWORKING ......................................... 93

4.1. The Choice of Timber ............................................................................................... 93

4.2. Seasoning Wood ...................................................................................................... 101

4.3. Kidori, Object-Oriented Cutting .............................................................................. 108

5. CULTURAL ASPECTS OF TRADITIONAL WOODWORKING ......................................... 117

5.1. Preference for Indigenous Wood ............................................................................... 117
  5.1.1. Earlywood and latewood .................................................................................... 117
  5.1.2. Aesthetic aspects of Japanese and foreign wood ................................................ 118
  5.1.3. Chinawood in Japan ........................................................................................ 119
  5.1.4. A different approach to indigenous wood ........................................................ 120

5.2. Sacred Aspects of Wood ......................................................................................... 120
  5.2.1. Felling a tree .................................................................................................... 120
  5.2.2. Timber for a Buddhist or Shintō image .............................................................. 122
  5.2.3. "First strike of the chisel" ritual ........................................................................ 124
  5.2.4. The "soul" of an image ..................................................................................... 125
  5.2.5. Objects created for shrines and temples ............................................................ 125
  5.2.6. Construction ceremonies ............................................................................... 126

5.3. Symbolic Associations ......................................................................................... 128
  5.3.1. The Shōsō-in as a source of inspiration ............................................................ 128
  5.3.2. Taking inspiration from Katsura rikyū ............................................................... 130
  5.3.3. The "Genpei War" example ............................................................................ 132

6. AESTHETIC ASPECTS OF TRADITIONAL WOODWORKING ......................................... 135

6.1. A Comprehensive and Broad Perception of the Beauty of Wood ......................... 136
**Contents**

6.1.1. Grain and figuring ................................................................. 136
6.1.2. Colours .................................................................................. 144
6.1.3. Texture and weight ............................................................... 148

6.2. Techniques for Enhancing the Beauty of Wood ......................... 150
6.2.1. Final carving techniques ......................................................... 150
6.2.2. Finishing and coating techniques ........................................... 154

6.3. The Quiet Beauty of Wood in the Tea Ceremony ......................... 159

6.4. Beauty and Beyond ................................................................. 162

CONCLUDING REMARKS ................................................................................................................. 163

Bibliography ................................................................................................................................. 165

Appendices ................................................................................................................................... 175
  Appendix 1 Names, Sizes, and Distributions of Japanese Timber, Trees, and Plants .............. 177
  Appendix 2 Scientific Names of Tree and Plant Species Mentioned in the Text ...................... 198
  Appendix 3 Physical and Manufacturing Properties ............................................................... 201

Glossary of Wood and Woodworking ................................................................. 203

Index ................................................................................................................................. 219
Index of Illustrations

Table 1 Chronological table ..................................................................................................................................................5
Map 1 Prefectures and regions of Japan. (Created using Generic Mapping Tools software.) .................................................................6

* 2 Japan in the Far East. (Based on Collcut et al., 1989, p. 15. Modified using GMT software.) .........................................................9
* 3 Vegetation zones and profiles of Japan. (Based on Horikawa, 1972.) ...........................................................................................11
Table 2 Location of trees in the botanical classification using the example of a coniferous tree, Chamaecyparis obtusa, and a broad-leaved tree, Fraxinus mandshurica var. japonica. ..........................................................................................................................24
Table 3 Vernacular names by way of the scientific name ..................................................................................................................25
Figure 1 Umbrella pine (kôyamaki; Sicyadopitys verticillata), Kôyasan (Wakayama Prefecture). .................................................................28
* 2 Umbrella pine (kôyamaki) beside Kôyasan's principal temple, Kongôbu-ji (Wakayama Prefecture). ................................................28
* 3 Main parts of a tree and circulation of nutrients (after Desch, 1968, p. 15) ................................................................................30
* 4 Macroscopic features of wood (modified from Schweingruber, 1990, p. 13) ................................................................................31
Table 4 Function of the cells in softwoods and hardwoods (after Lohmann, 1991, p. 14) .................................................................32
Figure 5 Tangential sections (itame) of Japanese yew (ichii; Taxus cuspidata) and Japanese chestnut (kuri; Castanea crenata). .................................................................................................................................33

* 6 Regular and simple grain of the radial section (masane) of left Japanese yew (ichii; Taxus cuspidata) and right Japanese chestnut (kuri; Castanea crenata) .....................................................................................................................34
* 7 “Crepe” figuring (shijimi-moka) on a board of Japanese horse-chestnut (tochinoki; Aesculus turbinata) ........................................35
* 8 “Tiger fleck” (torafu) on deciduous oak (nara; Quercus sp.) ...............................................................................................................35
* 9 “Tiger fleck” appearing as ribbons (detail of figure 8) ......................................................................................................................35
Table 5 Natural colours of wood (after Kiuchi, Narita, 1996, p. 53) .................................................................................................37
Map 4 Traditional woodcraft centers of the Japanese archipelago, excluding Hokkaidô and Okinawa. (Based on Inumaru, Yoshida, 1992; made using GMT software.) .................................................................44
Table 6 Sashimono craftsmen. .........................................................................................................................................................47
Map 5 Fields of fine cabinetmaking (sashimono) investigated in this study. .......................................................................................48
Figure 10 Ôsaka-style fine Chinawood cabinet made of rosewood (shitan; Dalbergia sp.). By Miyashita Kenjirô. (Photo by Miyashita Kenjirô.) ..............................................................................................................................50

* 11 Kashi-gata, or comb-shaped, window opening ...............................................................................................................................50
* 12 Joinery techniques for posts in Ôsaka-style fine Chinawood cabinetmaking ..................................................................................50
* 13 Examples of joinery techniques. [Based on Kyôto mokkô-gei kyôdo kumiai (ed.), undated, p. 13.] ...................................................50
* 14 Kyô-sashimono display cabinet intended for use in a Japanese-style room. By Iguchi Akiyo. ..........................................................51
* 15 Umekoboku-robuchi, uncoated hearth frame made from the wood of an old apricot (ume) tree. By Inao Seichûsai. (© Nihon Tokushu Printing.) ..................................................................................................................51

* 16–23 Various steps of working process of Hakone-style wood mosaic ...........................................................................................51–52
Table 7 Horimono/chôkoku craftsmen. ...............................................................................................................................................53
Map 6 Horimono/chôkoku production centers investigated by the author. .........................................................................................54
Figure 24 Higashi Katsuhiro, single-chisel yew sculptor, drawing the outline of a crab on the surface of a piece of yew. ....55

* 25 Carving of a Japanese bantam, rough stage (Japanese zelkova). .....................................................................................................55
* 26 Intermediate sketching (detail of figure 25). .................................................................................................................................55
* 27 Hollowed-out parts of a Buddhist sculpture (Japanese nutmeg). By Eri Kôkei. .................................................................56
* 28 Roughly-carved and loosely-assembled sculpture set aside for seasoning. By Eri Kôkei. ..............................................................56
| Map 10 | Natural distribution of Japanese cedar (sugi; Cryptomeria japonica) and its timber varieties. (Modified from Hayashi, 1960, map no. 60.) ...............................................................76 |
| Figure 69 | Akita-sugi (Akita Prefecture) ceiling panel (Izugen Meiboku Co.) ...............................................................78 |
| " | Yoshino-sugi (Yoshino, Nara Prefecture) ceiling panel (Izugen Meiboku Co.) ...............................................................78 |
| " | Yaku-sugi (Yakushima Island, Kagoshima Prefecture) ceiling panel (Izugen Meiboku Co.) ...............................................................78 |
| " | Tosa-sugi (also called Yame-sugi) (Kochi and Tokushima Prefectures) ceiling panel (Izugen Meiboku Co.) ...............................................................79 |
| " | Kirishima-sugi (southern Kyushu, especially Miyazaki Prefecture) ceiling panel (Izugen Meiboku Co.) ...............................................................79 |
| " | Kasuga-sugi (Mie Prefecture and vicinity of Nara Prefecture's Kasuga Shrine) ceiling panel (Izugen Meiboku Co.) ...............................................................79 |
| " | Kōgō, or incense container, made of koematsu, "fatty pine". By Ayabe Yuki. ...............................................................80 |
| Table 11 | Tree groups mentioned by Japanese woodworkers. .........................................................................................84 |
| Table 12 | Timber classifications used by Japanese woodworkers. .........................................................................................85 |
| Table 13 | A craftsman's classification of wood. ..................................................................................................................90 |
| Table 14 | An artisan's classification of Japanese cedar (sugi; Cryptomeria japonica). ........................................................................91 |
| Map 12 | Distribution of the northern variety of hiba arborvitaee (hinoki-asunaro; Thujopsis dolabrata var., hondai) (based on Hayashi, 1960, map no. 67). ...............................................................98 |
| Map 11 | Distribution of the southern variety of hiba arborvitae (hinoki-asunaro; Thujopsis dolabrata var., hondai) (based on Hayashi, 1960, map no. 62). ...............................................................99 |
| Figure 76 | Small Hakone-style wood mosaic chest. By Tsuyuki Hiroko. ............................................................................103 |
| " | The various components which will be joined together to form the mosaic patterns used in the making of Hakone-style wood mosaic chests. ............................................................................103 |
| " | Tama-moku, or “pearl” figuring. Japanese zelkova (keyaki; Zelkova serrata). ............................................................................104 |
| " | Regular flat-sawn grain. Japanese zelkova (keyaki; Zelkova serrata). ............................................................................104 |
| " | Shakes, or checks, seen on an end-grain surface. (Based on Greenhalgh (ed.), 1929, vol. 3, p. 6.) ............................................................................105 |
| " | Various grains, obtained by different cutting directions. .........................................................................................109 |
| " | Jewel case (hōsei-bako) cover with “fatty” pine (koematsu) figuring, framed in ironwood (tagayasan; Cassia siamea). By Wani Akio. ............................................................................110 |
| " | Bottom of jewel case, made of wenge veneer (wenji; Millettia laurentii) framed by solid ironwood (tagayasan; Cassia siamea). ............................................................................110 |
| " | Horse carved of one piece of buried zelkova (jindai-keyaki). ............................................................................111 |
| " | Stages in the carving of a Nō mask. .....................................................................................................................111 |
| " | Ayabe Yuki drawing the outlines of an object to be turned on a plank. An example of object-oriented cutting (kidori). ............................................................................112 |
| " | The priest Enkū (1632–1695) carving the face of a colossal guardian deity into a living tree. From Kinsei-kijinden [Legends relating to extraordinary persons of recent centuries] by Ban Kōkei (1733–1806). (Courtesy of the International Research Center for Japanese Studies, Kyōto.) ............................................................................123 |
| " | The hermit Hōdō, founder of the Ichijō Temple (Yamanashi Prefecture). Made by Eri Kōkei. ............................................................................124 |
| " | Vacant plot in the precincts of Ise Shrine. .............................................................................................................126 |
| " | Illustration from a carpentry manual showing a ridge-raising ceremony’s sanpei-gi ritual, performed to ward off misfortune during construction. Rice cakes and snacks are thrown to the crowd (Shōka hitsuyōki, 1756). (Courtesy of the Architectural Institute of Japan, Library Digital Archives.) ............................................................................127 |
| " | Foliate sandalwood offering box, or sasagemono. (Photo courtesy of Imperial Household Agency, Shōshō-in Office.) ............................................................................130 |
| " | Japanese zelkova box modeled after the foliate box in the Shōshō-in. By Iguchi Akio. (Kyōto University, Xylarium.) ............................................................................130 |
| " | Main shoin-style buildings of the Katsuura Imperial Villa (Katsuura rikyū). (Photo courtesy of Imperial Household Agency, Kyōto Office.) ............................................................................131 |
| " | Interior view of the Shin-goten showing, at rear right, the the kushigata no mado (Dentō bunka hozon kyōkai, 2001). (Courtesy of Imperial Household Agency, Kyōto Office.) ............................................................................131 |
Index of Illustrations

96 Akita-sugi ceiling panel with “Genpei” figuring (Izugen Meiboku Co.). .................................................................132
97 Principal structural planes in a stem. ......................................................................................................................136
98 Stems ready for auction at a Gifu Prefecture superior-quality wood market. ......................................................137
99 End grain of a black persimmon (karugaki; Diospyros kaki) stem. Auction market, Gifu Prefecture. ..............137
100 Nandina wood (nanten; Nandina domestica) incense container coated with Japanese lacquer. ......................138
101 Japanese camellia (tsubaki; Camellia japonica) incense container. ................................................................138
102 Different ways of cutting the wood for a Go board. .............................................................................................139
103 Japanese nutmeg Go board showing the inside surface of the flat-sawn grain (itame ki-ura ban). (© Kiseido Publishing Company.) ........................................................................................................139
104 Japanese nutmeg Go board with a “heaven and earth” straight grain (tenchi masa ban). .................................139
105 Japanese nutmeg Go board with a “heaven” straight grain (ten-masa ban). (© Kiseido Publishing Company.) 139
106 Mulberry wood pentagonal tray with a straight-grain rim and a flat-sawn grain bottom board. (© Nihon Tokushu Printing.) .................................................................................................................140
107 Straight grain on the cover of an Akita-sugi cooked-rice container made by Shibata Yoshinobu. (Photo by Cyril Ruoso.) ........................................................................................................................................141
108 Different shrinkage effects of boards depending on their original location in the stem. (Redrawn from Corkhill, 1979, p. 509.) .................................................................................................................141
109 Flat-sawn grain on the camphor wood (kiusunoki; Cinnamomum camphora) core of a Nō mask made by Shino Shinya. ........................................................................................................................................142
110 Figure of Izo bosatsu (bodhisattva Ksitigarba) made of straight-grained hinoki cypress. By Eri Kôkei. ............143
111 Seated figure of the priest Muso made of flat-sawn grained camphor wood. By Eri Kôkei. .................................143
112 Tray made of black persimmon wood with “peacock” figuring. (Photo by Cyril Ruoso.) ....................................144
113 Macroscopic view of the reddish-brown heartwood and the light coloured sapwood of jujube (nantse; Zizyphus jujuba). ........................................................................................................................................145
114 Frog on a wisteria seedpod. Carved by Higashi Katsuhiro from a single piece of jujube (nantse; Zizyphus jujuba) wood. (Takayama, Gifu Prefecture.) .................................................................................................145
115 Left: a piece of hinoki. Right: a piece of sugi. ........................................................................................................145
116 Differently colored persimmon wood. Left to right: kakinoki, persimmon; shima-gaki, “striped” persimmon; kurogaki, “black” persimmon. ........................................................................................................146
117 “Wild geese and moon” incense container with white inlay. By Iguchi Akio. .......................................................146
118 Small Hakone-style wood mosaic box showing a variety of patterns, each composed of different indigenous wood species. ........................................................................................................................................147
119 Kiso hinoki cypress image of Daiichi-nyorai (Buddha Mahâvârocanā). ..............................................................150
120 Detail showing the traces left by the final ko-zukuri carving. By Eri Kôkei. ........................................................150
121 Rough finishing with an old tool: a hinoki board from the Nara Period after having been finished in the ancient fashion with a curved-handled adze (chôna). ........................................................................151
122 Chestnut-wood beam at Hakusasonsô, villa of painter Hashimoto Kansetsu (1883–1845). The beam was finished in the decorative nagaari-shiage style. ......................................................................................151
124 Removing springwood from a flat-sawn grain board to duplicate the split surface of a straight-grain board. (Weinmayr, 1996, p. 35). ..........................................................................................................153
125 Traditional lamp made by Wada Ukichi. .................................................................................................................154
126 Detail showing the frame being finished with an uzukuri brush. ..........................................................................154
127 Urushi-coated, and uncoated incense containers made of nanten (heavenly bamboo). (Taisandô Gallery, Kyôto City.) .............................................................................................................................156
128 Tea scoops made of different wood species. By Ayabe Yuki. ..............................................................................161
In order to create a fine work, 
begin by knowing your wood. 
Then, because the wood is alive, 
it will align itself with your intentions.¹

¹ Woodworker and Intangible Cultural Property Takeuchi Hekigai (1896–1986) quoting one of his masters. 
Acknowledgements

The first step leading to the creation of this work was taken in Germany in 1983, when, intending to become an interior designer, I began a three-month cabinetmaking internship. Later, when my master, Joachim Lubasch, proposed doing a full apprenticeship, I enthusiastically accepted and started down the traditional three-year path.

Under the wise guidance of my master, I learned the tricks of the trade and how to distinguish the different wood species, not only by sight, but also by smell – when the scent of freshly cut timber filled the workshop – and by touch – when sawing, planing, and polishing the wood. Nowadays, machines have replaced many steps in the cabinetmaking process, but an apprentice in Germany still has to master the traditional tools and techniques. This I did, and my apprenticeship ended with an examination given under the supervision of the Federal State of Rhineland-Palatinate's Chamber of Handicrafts.

After a year engaged in antique furniture restoration, I decided to pursue an academic career and began to study Japanese and East Asian art history in the University of Heidelberg's newly established Department of Japanese Studies. Two years later, I continued my East Asian art history study at the University of Sorbonne (Paris IV), where I received a master's degree after having proposed a new method of dating Japanese Buddhist images.²

At that time, I came across an outstanding course on wood anatomy offered by the Faculty of Paleobotany-Paleoecology at the University Pierre and Marie Curie (Paris VII). There I learned the basics of microscopic wood identification and the scientific Latin names of trees.

The more I became involved in wood studies, however, the more I realized that within the community of archaeologists and art historians there appeared to be profound lack of information and expertise concerning Japanese wood. I therefore decided to try to fill that gap by writing – admittedly as an historian of East Asian art – a doctoral thesis in the field of ethnobotany under the direction of Professor George Métailié, research director of France's Centre National de la Recherche Scientifique (CNRS) and member of the Centre Alexandre Koyré at the National Museum of Natural History.

A great number of artisans in Japan still preserve customs and traditions that have been passed down from generation to generation. I was keen to base my research on the knowledge and experience of those woodworkers who continue to transmit this ancient wisdom. I aimed to interview them, hoping to elicit their views, not only on the technical, but also the aesthetic and cultural, aspects of their craft. Because of my woodworking background, I felt I would make a credible conversational partner. Professor Itoh Takao, a wood scientist well known for his skill at identifying the wood species of Buddhist images and excavated wooden remains, agreed to help me conduct the interviews and undertake the necessary research at Kyoto University's Wood Research Institute (now named the Research Institute for Sustainable Humanosphere.) I worked at his institute as an invited researcher from May, 1999, to July, 2001.

So many people have contributed to the present book that it would not be possible to name them all. By naming just a few, however, I do not wish to appear less indebted to the many others whose

² Mertz, 1995.
このプレビューでは表示されない頁があります。
Notes on typography

The present book observes the conventional Japanese proper name order, with family name appearing first. Special terms are italicized only when first introduced. Japanese terms and Japanese tree and timber names are italicized throughout the work. All translations from the Japanese are my own unless otherwise acknowledged.

Appendix 1 lists the Japanese vernacular names of all trees, wood, and plants mentioned in the present book; the Japanese characters for those names and their scientific names; their English, French, and German vernacular names; and the heights and the distributions of the trees.

Also appended is a glossary of technical terms related to wood and woodworking which shows the Japanese characters for those terms, as well as their English, French, and German equivalents.

Romanization of Japanese words employs the modified Hepburn system, although a few exceptions have been made in the case of Japanese proper names. In some instances, Japanese terms have been hyphenated to clarify pronunciation. The symbol ^ above a letter indicates an elongated vowel. The suffixes -ji or -dera indicate a temple, -jinja and -jingû a shrine, -ken a prefecture, -gun a district, -shima or -tô an island, and -san a mountain. The suffix -kuni denotes a province, and -han a feudal clan or province. The traditional measurement shaku is the Japanese equivalent for “foot” and is divided into ten sun. One shaku is equivalent to 30.3 cm, one sun to 3.03 cm, and one bu to 0.3 cm.

3 Japan was divided into seventy-three provinces until 1890. Now it consists of forty-seven territorial jurisdictions: the capital (to) Tôkyô, an island prefecture (dô), two urban prefectures (fu), and forty-three other prefectures (ken).

4 “In 1885 a decision was made to align the Japanese standards with the predominantly European-based standard, much to the chagrin of the British and the Americans. It was decided that one meter should comprise 3 shaku, 3 sun. One shaku thus became 30.3 centimeters […]. These standards were formally adopted in 1885 and promulgated by imperial decree in 1886.” (Coaldrake, 1990, p. 156.)
このプレビューでは表示されない頁があります。
INTRODUCTION

Because the main theme of this book concerns Japanese traditional woodcraft, it is necessary to understand the local environment and the influence it has on the rich variety of wood available in Japan. In order to do so, this introduction will deal with these topics, as well as Japan’s *ki no bunka*, or “culture of wood”.

The natural environment

The Japanese archipelago consists of a range of mountainous islands stretching southwest to northeast along the eastern edge of the Eurasian continent. To the west lies the Sea of Japan and to the east the Pacific Ocean. It has a south-north extension of approximately 2,400 km from about 24° to 46° north latitude. Hence, it extends from the subtropical to the subarctic zone. It consists of four main islands—Hokkaidô, Honshû, Shikoku, and Kyûshû—which occupy about 97% of the total land area. Apart from these there is a scattering of several thousand small islands. The total land surface covers 372,300 km². “The Japanese lands are connected intermittently with the Asiatic continent by four land chains, namely, by the Kurile Islands and Kamchatka, by Sakhalin, by the Tsushima Islands and the Korean Peninsula and by the Ryûkyû Islands and Taiwan. These land chains are important in tracing the origin of the Japanese flora in connection with the continental flora”.

Covered by abundant verdure, the Japanese islands are blessed with an extraordinary variety of wood species.

Asa Gray was one of the first botanists to attempt to statistically compare the great number of arborescent species in Japan with those of northeastern North America. He “drew some comparison between the forests of eastern North America and those of the Japanese-Manchurian region of Asia. Here is shown that, rich as eastern America is in tree species, Japan, and the regions to the north of it, in spite of their comparatively small area, are still richer. Professor Gray’s Asiatic region included the four Japanese islands, eastern Manchuria, and the adjacent borders of China, while the contrasted American region embraced the territory east of the Mississippi River, but excluded the extreme southern part of Florida [...] In the Japan-Manchurian region he found 168 trees divided among 66 genera, and in eastern America 155 trees in 66 genera, the enumeration in both cases being confirmed to ‘timber-trees, or such as attain in the most favourable localities to a size which gives them a clear title to the arborescent rank’ Other botanists continued such analogical procedures with the entire flora. Maekawa Fumio, for example, compares Japanese flora with that of the

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6 Horikawa, 1972, p. 8.
7 Asa Gray (1810–1888), botanist at Harvard University from 1842–1887. In his phytogeographic research, Gray explained that many of the plant taxa which appeared in both eastern Asia and eastern North America, are not separate creations, but rather descendants from a Tertiary circum-boreal flora that was pushed southward by the Pleistocene glaciation. (Leppig, 1996.)
8 The Japan-Manchurian region comprises here eastern Manchuria, the Kurile Islands, Sakhalin, and the four main Japanese islands, the Ryûkyû Islands not included.
9 Sargent, 1894, pp. 1–2.
10 Ohwi, 1965 (with the exclusion of the Ryûkyû and Bonin Islands).
このプレビューでは表示されない頁があります。
1. WOOD BASICS

A complex material, wood comes from a large number of different species, each possessing specific features and properties. Any discussion of wood in an international setting, however, requires a thorough comprehension of trees and timber names, and, for this reason, this book begins with an introduction to wood nomenclature.

It is also important to equip the reader with some understanding of the basics of wood (e.g., its structure and properties) so that wood as a material may be better defined. This knowledge will prove useful in understanding the following chapters.

1.1. Nomenclature of Trees and Timbers

When Japanese woodworkers and wood scientists talk about wood, they do not use the same terminology. Woodworkers use betsumei – non-standard, or vernacular names. However, scientists, especially botanists, use gakumei – botanical, scientific, Latin (or Latinized) names. For example, a Japanese woodworker, referring to a paulownia, would use the term kiri, but a wood scientist would use Paulownia tomentosa. Thus, when studying wooden artefacts in the context of such Western social sciences as East Asian art history, archaeology, and ethnology, the researcher faces a problem of terminology.

Does the term in question refer to the living tree, or to the wood material? Should one use the scientific name, the Japanese vernacular name, or the vernacular name of one’s own language, if indeed such a name exists? And when several names exist, which one should be used? Which names will be understood in an international context? Wood or tree names are surprisingly complex for the non-botanist, causing confusion and misunderstanding. This is especially true when a non-Japanese vernacular name is used. Take, for example, the case of paulownia, which in addition to several other English names (royal paulownia, princess tree, foxglove-tree, empress tree, imperial tree), also has French (paulownia imperial, arbre d’Anna Paulowna, paulownia tomenteux), and German (Paulownie, Blauglockenbaum, chinesischer Blauglockenbaum, filzige Paulownie, Kiribaum, kaiserliche Paulownie) ones.

In the Japanese language the character 木 stands for both “tree” and “wood”. Both the native Japanese transcriptions ki and ko as well as the Sino-Japanese readings moku and boku refer to the standing tree and the wood. Ko, moku, and boku are only found in multi-character compound words. The Japanese vernacular names of the living tree and the wood material are one and the same; often the context reveals which is meant. Botanical names are only used in highly specialised botanical or horticultural discourse and are difficult for those who are not trained in their use. In many other fields, such as woodworking and carpentry, but also more scholarly fields, such as Japanese literature and poetry, trees and wood are referred to by a variety of other names, which vary depending on the linguistic context and the region. An explanation of the terminology of Japanese wood and tree names should be based on a clear differentiation and understanding of the concepts of botanical and

69 In Appendix 1, the names are given in the three languages mentioned here.
このプレビューでは表示されない頁があります。
1. Wood Basics

market this inner bark can be easily seen if the outer bark (gai-jushi) has been ripped off by rough handling. The tree is, in fact, the Korean pine (*Pinus koraiensis*), its standard vernacular Japanese name *Chôsen-goyô* (literally, "Korean five-leaves") referring to the needles clustered in groups of five. The term *benimatsu* is the Japanese reading of its Chinese name *hong song*.

It is quite common for more than one species to be included under a single timber name, either because the wood species are functionally equivalent and can be used interchangeably, or, because once they are cut, they are very difficult or impossible to distinguish.

Conversely, the wood of a single species may be divided into more than one commercial category, resulting in more than one trade name. This is the case with persimmon (*kakinoki; Diospyros kaki*), which can be called "black persimmon" (*kurogaki*), or, when the timber is irregularly blackened, "striped persimmon" (*shimagaki*).

As Japan generally does not export its wood, there are hardly any special trade names for Japanese timbers in Western languages. One of the rare exceptions is the Japanese ash, also known as *tamo* (*Fraxinus mandshurica*), which has been exported by Japan since the end of the nineteenth century for precious veneers.

A great number of trade names exist for foreign timbers imported into Japan. The Japanese usually adopt the international timber market name, as in the case of teak (*chîku; Tectona grandis*) or lauan (*rawan; Shorea spp.*). Other examples are discussed in Chapter 3, but an extensive study of the nomenclature of imported timber goes beyond the scope of this book. For now, I refer readers to

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102 Ishii, 1994, p. 1037.
103 George: http://www.george-veneers.com/recup_donnees_bois.php, see "tamo."
このプレビューでは表示されない頁があります。
1.3.2. Tangential section

The tangential section is the surface of the wood that is cut tangentially to the annual rings. The wood shows a flat grain and is thus called flat-sawn grain, or, in Japanese, itame. Typically, the growth rings appear cone-shaped and lined up one above the other. It is helpful to imagine the stem itself being cone-shaped. The larger diameter is situated at the bottom and the stem gradually becomes narrower towards the crown. As a result, the tree-ring layers are not at exact right angles to the ground; as their diameter gradually diminishes towards the top of the tree, their alignment is inclined towards the pith. When the timber is cut tangentially into boards, the saw cuts into the tree rings and makes several layers visible. The layers are alternately light and dark in softwoods, whereas in hardwoods the cutting into the vessels has an effect on the texture, especially in wood with larger pores. Both show a design of small parabolas or cones (figure 5).

![Figure 5](image-url) Superposed parabolas or cones, a typical feature of a tangential section (itame) of, left, Japanese yew (ichii; Taxus cuspidata), and, right, Japanese chestnut (kuri; Castanea crenata).

In Japanese the expression takenoko-moku, or “bamboo shoots” figuring (figure 5, left), compares the beautiful design created by such cones in the centre of a board to the shapes of bamboo shoots. This figuring is generally related to softwoods, which show a relatively distinct early and latewood. It appears, for example, often in Japanese cedar (sugi; Cryptomeria japonica).

1.3.3. Radial section

The radial section is the surface of a wood cut along a plane containing the axis or the pith. The wood grain is called quarter-sawn grain or straight grain (figure 6). The Japanese name is masame. Distinctive growth rings appear as lines in the radial section. This gives a regular, almost monotonous grain, very much appreciated in Akita-sugi, Japanese cedar from Akita Prefecture in northern Japan. The wood shrinks and warps (hizumu) less than when flat-sawn. In certain wood species, especially oak, rays strikingly appear as large shiny bands. This beautiful figuring is called silver grain,109 or torafu (literally, “tiger fleck”) in Japanese (figures 8 and 9).

109 In France, particularly in Normandy, this silver grain was very much appreciated for use in chests made of “chêne merrain” (‘wainscot oak’). Imported from the Baltic via the harbour of Riga, silver-grained wood was used for principal surfaces such as doors and panels. “Les bâtis et les moulures en chêne dit ‘de Prusse’ encadrent des panneaux de merrain moirés de larges mailles. Le bois de chêne, dénommé ‘merrain’, connu et employé depuis longtemps, doit être fendu et non scié, et débité en rayons médullaires afin d’obtenir les belles mailles mouvementées des panneaux ; les montants et les traverses, appelés à recevoir des moulures
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2. TRADITIONAL WOODWORKING IN JAPAN

This book’s objective is to provide a picture of the variety of Japanese wood species and their uses in traditional Japanese crafts. As the best means of accomplishing this, it was decided to interview contemporary craftsmen still active in the field of traditional Japanese woodworking.

The focus of these interviews was placed mainly on traditional crafts because their history dates back prior to the opening of Japan to the West in 1854. As a result, the traditional crafts that survive today are largely free from foreign influences and new technologies.

Even today a great number of traditional crafts are practiced throughout Japan. They survive in spite of a century of rapid economic growth that propelled Japan from a feudal state into one of the most industrialized countries in the world. In such a Westernized and market-oriented society, however, these traditional crafts are threatened with the risk that they will slowly disappear. Concerned by this possibility, the Japanese government decided to pass legislation to protect and promote traditional craft industries, a decision that arose out of a growing awareness that these age-old traditional Japanese crafts represent an inestimable treasure which merits protecting.

As early as 1950, a law was passed protecting National Cultural Properties. On May 25, 1974, the Law for the Promotion of Traditional Craft Industries was enacted, its chief aims being "to ensure an understanding [and] appreciation of the crafts, their reliable and efficient marketing, and also their continued healthy existence in the future." It is up to the Ministry of Economy, Trade and Industry (METI) to decide which craft items can be labelled “traditional handicrafts”. The law stipulates that certain criteria must be fulfilled in order for an item to be considered a work of traditional craftsmanship. The law describes these criteria as follows:

a. Objects used in everyday life.
   Craft items are officially defined as objects used in everyday life. In a larger sense this also includes objects used during such special ceremonial occasions as annual festivals. Even if they are used only a few times a year, or not at all, they are considered to be part of the Japanese way of life. Objects used for entertainment or in leisure activities are

126 In 1854, under the pressure of the American government and the threat of an attack by a fleet under the command of Commodore M. C. Perry (1794–1858), the Tokugawa government was forced, after more than 200 years of relative isolation, to open the country for trade with the West. With the opening of the country, Japan was exposed to many aspects of Western culture. The bunmei kaika, or “civilisation and illumination” which followed, was a period of rapid Westernization. During this process of modernization, many aspects of the traditional Japanese way of life were replaced by Western ones, and this had a great impact on traditional handicrafts and everyday objects. A great number of crafts went into decline or disappeared altogether.
127 Japan Traditional Craft Center (ed.), no date, p. 5.
128 Reorganised in 2001, it was formerly called the Ministry of International Trade and Industry (MITI).
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2. Traditional Woodworking in Japan

Japanese woodworking fields (by prefectures)
(01) Iwayadô chests (Iwate)
(02) Cherry bark (Akita)
(03) Ōdate bentwork (Akita)
(04) Akita cedar cooperage (Akita)
(05) Oku-Aizu basketry (Fukushima)
(06) Kasukabe paulownia chests (Saitama)
(07) Edo-style fine cabinetmaking (Tôkyô)
(08) Hakone-style wood mosaic (Kanagawa)
(09) Kamo paulownia chests (Niigata)
(10) Matsumoto furniture (Nagano)
(11) Nagiso turning (Nagano)
(12) Inami woodcarving (Toyama)
(13) Single-chisel yew carvings (Gifu)
(14) Nagoya paulownia chests (Aichi)
(15) Kyôto-style fine cabinetmaking (Kyôto)
(16) Ōsaka transoms (Ôsaka)
(17) Ôsaka-style fine Chinawood cabinetmaking (Ôsaka)
(18) Ôsaka Senshû paulownia chests (Ôsaka)
(19) Toyôoka willow basketry (Hyôgo)
(20) Kishû paulownia chests (Wakayama)
(21) Miyajima woodcraft (Hiroshima)

Map 4 Traditional woodcraft centers of the Japanese archipelago, excluding Hokkaidô and Okinawa. (Based on Inumaru, Yoshida, 1992; made using GMT software.)
このプレビューでは表示されない頁があります。
5 kidori (object-oriented cutting)

In object-oriented cutting the woodworker prepares the wood for carving. He decides how to position the desired object in the woodblock (i.e., he decides which surface will be the main one), then draws a sketch of the object on the raw wood block.

6 arabori (rough carving)

7 uchiguri (hollowing out)

8 kansō (seasoning)

Large objects have to be hollowed out in order to prevent cracking and splitting. After having been hollowed out, the sculpture's walls are then thin enough to be seasoned. In this state the sculpture is set aside to dry for at least one year.
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the rough turning, or *aradori*.\(^{145}\) The *uma* enables the tool to be operated like a lever, and this makes the work easier. The chisel is held at a certain angle against the turning piece, which rotates counterclockwise. Movement, angle, and tool pressure are controlled not only by the hands, but by the whole upper body. For rough carving, the tool is directed with great pressure, and the piece soon acquires the rough shape of a round bowl. The turner places himself in front of the object to turn the inside of the piece (figure 40). To fashion the outside, the craftsman changes his position to the side (figure 41).

Figure 40 Turning the inner surface of a bowl, (Nagiso, Nagano Prefecture).

Figure 41 Turning the outer surface of a bowl, (Nagiso, Nagano Prefecture).

Figure 42 Roughly-turned pieces being seasoned.

\(^{145}\) Although both planes and turning chisels are called *kanna* in Japanese, the names of planes are always written in kanji (Chinese characters), while turning chisel names are written in katakana.
このプレビューでは表示されない頁があります。
3. WOODWORKERS AND WOOD NOMENCLATURE

This chapter examines the timber nomenclature employed by Japanese woodworkers and attempts to establish a classification of timber names based on their usage of them. Vernacular timber names take into account an artisan’s use of the wood. The names may reflect the technical and aesthetical exigencies of the artisan’s working field, the geographic origin (local or foreign) of the timber, or some symbolic quality of the wood species.

In order to classify Japanese timber names, it is necessary to introduce both the timber names encountered in the interviews and the collective terms used to designate groups of wood. The chapter is divided into the following sections:

- Japanese Timber Names
- Tree and Timber Group Names
- Timber Classifications Used by Craftsmen

3.1. Japanese Timber Names

As was mentioned in Chapter 1.1.3., many Japanese timber names are synonymous with tree names: *hinoki*, for example, may be used to indicate the tree as well as the wood. This is comparable to Western languages, whereby “oak”, “chêne” and “Eiche” may refer to both the tree and the wood, depending on the context. In the present study, however, one must keep in mind that traditional Japanese woodworkers, when using a timber name, refer to the material, not to the tree.

Besides the standard vernacular timber names, names can also reflect particular qualities of wood, ones that a craftsman is looking for. These qualities might be related to region, age, unusual growth, specific elements requiring a special way of cutting and treatment, or to a combination of these. In general, the name of such a particular wood is a combination of the standard vernacular name and a word that refers to that wood’s particular property or feature. Such varieties of timber names also exist in Europe. The “European oak” (*Quercus petraea*), for example, is a hard, heavy wood, creamy-white to dark brown in colour. When it is riven or quarter-sawn, its surface shows a beautiful figuring, of conspicuous rays called “silver-grain”. “Wainscot oak” is the name given to this distinctive feature. In French this wood is known as “chêne merrain”. The so-called “brown oak” owes its name to a colour change caused by a parasitic mushroom, *Fistulina hepatica*, rendering the heartwood a darker shade, often a deep reddish-brown. This wood is highly appreciated by cabinetmakers. This was particularly the case in the nineteenth century. Oak timber that has been preserved in a peat bog is called “bog oak”. The very dark colour, caused by iron impregnation, meant that this timber was ideal for inlay and applied decoration. The specific Japanese timber names mentioned by the craftsmen interviewed will be discussed below. They are divided into:

- Wood names with an area-related prefix
- Wood names with a characteristic-related prefix

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154 Ibid., p. 25.
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4. TECHNICAL ASPECTS OF TRADITIONAL WOODWORKING

From the selection of the log, or *genboku*, to the completion of the artefact, or *seihin*, a series of working processes has to be carried out. These steps, each of which requires the highest degree of craftsmanship, jointly determine the final outcome of the piece. However much of a routine some of these processes may become, the artisan will still exercise deep reflection and careful judgment – habits acquired after numerous years of practice.

In the following sections three crucial woodworking manufacturing processes will be discussed: the choice of timber, its seasoning, and object-oriented cutting.

Choice of timber involves selecting the wood species appropriate for the object to be manufactured, as well as judging the quality of that timber.

Proper seasoning, or drying (*kansô*), of the wood is a time-consuming process but is essential to the successful creation of a wood product for it determines the workability of the wood and durability of the final object.

The working process which woodworkers themselves described as being the most difficult is *kidori*, or object-oriented cutting. A key process, it decisively determines an artefact's features and qualities.

Finishing techniques, meant to protect and embellish the surface of an artefact, have a great impact on the final object's character as well. They are discussed in Chapter 6, which gives a detailed description of wood aesthetics and the techniques used to enhance a wood's beauty.

4.1. The Choice of Timber

The choice of an appropriate wood species for an artefact determines that object's durability, as well as its special features and characteristics. Each woodworking field has at its disposal a range of wood species, each of which fulfills specific technical, economic, aesthetic, and symbolic criteria.

Technical criteria refer to those properties and qualities of wood which make it suitable for the various purposes for which it is required. Important properties are elasticity, durability, cleavability, flexibility, weight, and moisture content.¹⁸⁹

Economic criteria are determined by the origin of the wood, its availability, its quality, and its price. Generally it can be said that objects intended for daily use are made of local wood, whereas sophisticated artefacts, such as utensils for the tea ceremony, are made of imported or precious indigenous wood. Based on its place of origin, wood belongs to one of the following categories:

¹⁸⁹ See Corkhill, 1979, p. 577.
このプレビューでは表示されない頁があります。
5. CULTURAL ASPECTS OF TRADITIONAL WOODWORKING

In addition to technical and aesthetic considerations, cultural aspects also influence wood selection and manufacturing. The wood species used in traditional Japanese woodworking are generally indigenous ones. Needless to say, the modern woodworker does have access to foreign wood species and in some cases resorts to them as substitutes for rare Japanese species. However, the Japanese woodworker still, on the whole, prefers indigenous species, and the reasons for this are interesting to consider.

In the case of Buddhist sculptors, woodworkers who make objects for a temple or shrine, and *miya-daiku*, a religious dimension plays a part in the selection of wood material. Various ceremonies related to the timber, the finished object, and to the manufacturing process are also involved.

At other times, important cultural properties such as the wooden objects in the Shōsō-in collection, or even well-known historical figures or events, provide the woodworker with inspiration. This imbues his creations with certain symbolic associations, recognizable to and appreciated by the connoisseur.

Three distinct cultural aspects, which have a considerable influence on wood selection and the manufacturing process, will be discussed in the following sections:

- Preference for indigenous wood
- Sacred aspects of wood
- Symbolic associations

5.1. Preference for Indigenous Wood

Most Japanese woodworkers value indigenous wood more than foreign wood. This preference must be seen as reflecting their appreciation of the properties of Japanese wood, especially those special technical or aesthetic qualities required by the woodworker’s specific field.

With the exception Buddhist sculptor Eri Kôkei, the woodworkers interviewed all confirmed a preference for Japanese wood, although the reasons given varied from person to person. Some spoke in general terms, others gave precise examples. Some praised indigenous wood for its superior mechanical properties, while others praised its aesthetic qualities.

Carpenter Hirose Takayuki explained his preference for Japanese wood in just a few words, claiming that its quality is *chimitsu*, or especially fine, and that it hardly ever cracks.

5.1.1. Earlywood and latewood

Sculptor Yano Kazuma was more detailed, pointing out the difference in hardness between earlywood and latewood and also explaining that Japanese wood warps less:

Compared to foreign wood, the difference between the hardness of *natsume* [earlywood] and *fuyume* [latewood] is relatively small in Japan. Take the example of pine or paulownia wood imported from foreign countries: the latewood is rather *kachi-kachi* [hard] while the earlywood is relatively *boku-boku* [soft]. This might be related to the climate. Wood from Japan also warps less. I’m not sure why, but in wood imported from northern countries
このプレビューでは表示されない頁があります。
6. AESTHETIC ASPECTS OF TRADITIONAL WOODWORKING

One of the most striking things about Japanese wooden artefacts is the amount of effort that has gone into bringing out the beauty of the wood grain. Great care has also been taken so that the grain balances harmoniously with the wood's colour and texture.

For each wood species, there are many ways in which colour, texture and grain can be shown to good advantage. The woodworker's choice of wood species determines the surface features of a wood. So, too, does his way of selecting and cutting the timber – a process called kidori – and his method of shiage, or surface finishing. Notably, the wood surface is sometimes left uncoated because the bare surface – the shiraki (literally, “white wood”) – is prized for its natural beauty. The outlines or shape of the artefact itself is often relatively simple – subordinate to, and thereby enhancing of, the beauty of the grain.

In order to understand the Japanese perception of wood, it is necessary to comprehend certain underlying aesthetic notions. What are the forces guiding these notions? What kind of rules or principles apply and to what do they refer?

A natural product, wood is considered aesthetically even before being processed. Many woodworkers appreciate the natural beauty of the raw material just as much as they do the enhanced beauty of a processed surface.

When interviewed, each woodworker was asked to describe his personal perceptions of the beauty of wood and to discuss his sensibility in regard to wood in general and to certain visual aspects, such as grain (mokume) and figuring (moku), in particular. He was further asked which techniques he used in order to express the beauty of wood in his work.

Most of the woodworkers were surprised by the questions. Some communicated their opinions spontaneously, while others needed time to reflect. It was interesting to note that they often described their feelings about wood using human attributes. Wood was often called “warm” and “vivid”. Ayabe Yuki, of the Kyôto-style fine cabinetmaking guild, straightaway compared trees with human beings, saying that buds in spring reminded him of the seimeikan (vitality) of young people.

A strong feeling evidenced towards wood was that of respect and responsibility. Ogura Masami, turner and a former woodcutter from Shiga Prefecture's Hirutani, expressed a strong feeling of diffidence and respect towards the trees he felled for personal use. This attitude was similar to Ayabe's fear of wasting wood and Yano Kasumi's fear of making an unworthy artefact, an act that he likened to causing the “death” of the wood.

Almost all the woodworkers interviewed demonstrated a deep feeling of respect and passion for wood and considered it to be alive. They said that in their work they wanted to bring out the wood's aji – a fundamental concept indicating a wood's intrinsic character or nature. To the woodworkers, each wood species has its own "personality", made up of a combination of colour, texture, grain, and various other physical and mechanical properties. Well aware of the specific character of each wood species, they consider it their task to express this aji in their work.
このプレビューでは表示されない頁があります。
A Comprehensive and Broad Perception of the Beauty of Wood

while the light yellow seedpod was carved out of sapwood.

The following two examples concerning the colour of wood refer to two important wood species in Japanese culture – hinoki cypress and persimmon – both of which are appreciated for their colour, but in very different contexts.

Hinoki cypress wood has a predominant position in Japanese wood culture. In addition to its other qualities, it is appreciated for its white colour. When one compares it with other softwoods, such as Japanese cedar, the dark latewood part of its tree rings is rather narrow, making the wood look almost entirely light in colour (figure 115).

Bishū-hinoki, the hinoki cypress from Nagano Prefecture’s mountainous Kiso area, is particularly prized for its fine grain and white colour. Many woodworkers, including Buddhist sculptor Eri Kōkei, prefer using it.

In ancient times a large number of Buddhist images were made of hinoki cypress. The preferred material of Heian-Period Buddhist sculptors, it replaced kusunoki – Japanese camphor wood, which
このプレビューでは表示されない頁があります。
Concluding Remarks

My hope is that this book has left the reader with a general understanding of the importance of wood and with a specific sense of its importance in Japan.

Currently Japan boasts many craftsmen actively engaged in the pursuit of traditional woodworking crafts. However, the majority of them are well-advanced in years, and, unfortunately, few young Japanese show an interest in carrying on the time-honored traditions of their fathers.

In spite of the role played by wood in cultural heritage and tourism, Japan does not always display a keen awareness of its importance. In the city of Kyôto, for example, which can claim seventeen temples and shrines designated World Heritage Sites, the destruction of wooden townhouses called machiya continues unabated, with 1,000 to 1,500 being demolished every year.333

Considering such facts, one can only wonder what the future holds for Japan's culture of wood. This concern gave added impetus to my research.

On the bright side, traditional crafts in Japan do receive government support. In this respect, Japan has the potential to serve as a role model for other countries, notably China, where traditional crafts are not the beneficiaries of such aid.

Also, the Research Institute for Sustainable Humanosphere (former Wood Research Institute) of Kyôto University, is an active center for, among other fields, wood research. Bringing together wood scientists, historians, archeologists, and craftsmen, it regularly hosts symposia on wood culture and science.

The core of this book is composed of the wealth of information yielded by the interviews that Professor Itoh Takao and I conducted with twenty-nine Japanese woodworkers. Through these interviews, I was allowed to go deep into the activities of traditional Japanese crafts and to understand things not easily accessible to a non-Japanese. In addition to granting me insights into the Japanese culture of wood, several of the artisans interviewed also became friends. I consider this to be one of the most gratifying results of my research.

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Bibliography

Western Languages


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Appendices

Appendix 1 Names, Sizes, and Distributions of Japanese Timber, Trees, and Plants

Appendix 2 Scientific Names of Tree and Plant Species Mentioned in the Text

Appendix 3 Physical and Manufacturing Properties

Notes

Appendix 1 Names, sizes, and distributions of Japanese timber, trees, and plants:

The following table presents in alphabetic order names of Japanese timber, trees, and plants mentioned in this book. In the first column, the standard vernacular name is printed in bold letters, whereas the other vernacular names are printed in normal Roman text.

The following columns show from left to right the Japanese kanji or character\(^1\), the scientific name with the "author's name", the English, French, and German vernacular names, and the height of the living tree. In the last column each tree species is geographically described by a rough sketch of its distribution areas.

The *Nihon no yasei shokubutsu – mokuhon/Wild Flowers of Japan – Woody Plants*\(^2\) served as my reference source for Japanese vernacular names and for scientific names. *Makino's New Illustrated Flora of Japan*\(^3\) is useful for comparison, but I consider the former to be the authoritative source.

The English, French, and German vernacular names have been culled from the following reference books. The first letter(s) of their author's name or the work's title appear after the non-Japanese tree name so that the reader can trace the reference.

**English, French, German, and Japanese tree names:****

- BÄRNER (1962) B
- BOERHAVE BEEKMAN (1964) BB
- ZANDER (et al. 2000) Z
- QUATTROCCHI (2000) Qu
- UEHARA (1961) U
- VAUCHER (1986) V

---

1 Japanese scientists only use katakana for the Japanese tree and plant names.
4 Boerhave Beekman, Zander and Vaucher do not list Japanese names.
このプレビューでは表示されない頁があります。
<table>
<thead>
<tr>
<th>Japanese</th>
<th>English</th>
<th>French</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>abura, yani</td>
<td>resin, grease, fat</td>
<td>résine, graisse</td>
<td>Harz, Fett</td>
</tr>
<tr>
<td>abura</td>
<td>oil</td>
<td>huile</td>
<td>Öl</td>
</tr>
<tr>
<td>aburake</td>
<td>resinousness, greasiness</td>
<td>teneur en résine, qualité de ce qui est gras</td>
<td>Harzgehalt, Fettigkeit</td>
</tr>
<tr>
<td>aburake</td>
<td>oiliness</td>
<td>Olgehalt</td>
<td></td>
</tr>
<tr>
<td>aij, aitai (kino)</td>
<td>a wood's character</td>
<td>caractère spécifique, nature véritable (du bois)</td>
<td>spezifische Eigenschaften (eines Holzes)</td>
</tr>
<tr>
<td>akami, shinzai (rika, shirata, henzai)</td>
<td>heartwood, duramen (sapwood)</td>
<td>duramen, bois de cœur, bois parfait (sapwood)</td>
<td>Kernholz (Splintholz)</td>
</tr>
<tr>
<td>aku</td>
<td>oiliness</td>
<td>Ölgehalt</td>
<td></td>
</tr>
<tr>
<td>ame-iro</td>
<td>amber colour</td>
<td>couleur ambrée</td>
<td>Geschmack, ungünstige Eigenschaften, bernsteinfarben</td>
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<tr>
<td>ami-moku</td>
<td>&quot;net&quot; figuring</td>
<td>motif ou figure du bois en forme de &quot;filet&quot;</td>
<td>&quot;Netz&quot;-Maserung</td>
</tr>
<tr>
<td>amimono</td>
<td>object made by weaving wooden strips</td>
<td>structure tressée, lamelles de bois en treillis</td>
<td>Flechtwerk aus Holzspan, grobes Schnitzen, zurücken, vorarbeiten, grob ausformen</td>
</tr>
<tr>
<td>arabori</td>
<td>rough carving</td>
<td>ébauche</td>
<td></td>
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<tr>
<td>aradori</td>
<td>roughing gouge, chisel for rough turning</td>
<td>gouge à dégrossir</td>
<td>Schruppsstahl, Schruppeisen (zum Dreheln)</td>
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<td>arai</td>
<td>rough, coarse</td>
<td>grossier</td>
<td>rauh, grob</td>
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<td>arakaze</td>
<td>rough planing, levelling</td>
<td>raborter, dégauchir</td>
<td>abrichten</td>
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<tr>
<td>argumi*</td>
<td>dovetail joint</td>
<td>assemblage en queue d’aronde</td>
<td>Schwalbenschwanverbindung, Zinkung, Schwabenschwanverbindung, Zinkung</td>
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<tr>
<td>ashuku-atezai</td>
<td>compression wood</td>
<td>bois de compression</td>
<td>Druckholz</td>
</tr>
<tr>
<td>aezai</td>
<td>reaction wood</td>
<td>bois de réaction</td>
<td>Reaktionsholz</td>
</tr>
<tr>
<td>banzai (sôzai)</td>
<td>latwood, (summerwood)</td>
<td>bois final, (bois d’été) (bois initial)</td>
<td>Spätholz (Frühholz)</td>
</tr>
<tr>
<td>bentô-bako</td>
<td>lunch box</td>
<td>boîte à bentô</td>
<td>Bentô-Schachtel, Frühstückskästchen, Bentô-Schachtel, Frühstückskästchen</td>
</tr>
<tr>
<td>betsumei</td>
<td>vernacular name, non-standard name</td>
<td>nom vernaculaire</td>
<td>einheimischer Name</td>
</tr>
<tr>
<td>bwa</td>
<td>frisu, Japanese lute</td>
<td>sculpture bouddhique</td>
<td>Bildhauer buddhistischer Skulpturen</td>
</tr>
<tr>
<td>bos</td>
<td>sculpture</td>
<td>sculpture bouddhique</td>
<td>Bildhauer buddhistischer Skulpturen</td>
</tr>
<tr>
<td>bou</td>
<td>1/100 of a shaku, 1/10 of a sun=0.3 cm</td>
<td>1/100 d’un shaku, 1/10 d’un sun=0.3 cm</td>
<td>1/100 eines shaku, 1/10 eines sun=0.3 cm</td>
</tr>
<tr>
<td>butsu-moku</td>
<td>&quot;grapes&quot; figuring</td>
<td>motif en &quot;grappe de raisin&quot;</td>
<td>&quot;Trauben&quot;-Maserung</td>
</tr>
<tr>
<td>baushi</td>
<td>sculptor of Buddha images</td>
<td>sculpteur d’images bouddhiques</td>
<td>Bildhauer buddhistischer Skulpturen</td>
</tr>
<tr>
<td>butsuzô</td>
<td>Buddhist sculpture</td>
<td>Buddhistische Skulptur</td>
<td></td>
</tr>
</tbody>
</table>
このプレビューでは表示されない頁があります。
Index

A
abacus (soroban) 87
abra (resin) 80
abra (oil) 154
abra-sugi (David’s fir) 80, 95
adze (chôna) 61, 151
agricultural tools (nôgu) 13
air permeability (tsûkisei) 77, 154
air seasoning (shizen-kansô, tennen-kansô) 103
Aizu giri 80
aji (ki no) (a wood’s character) 114, 135, 151, 153
akagashi (Japanese evergreen oak) 13; Table 5
akamatsu (Japanese red pine) 23, 27, 73, 80; Table 5
akami (heartwood) 29, 36; figures 3–4
Akita-sugi (Akita cedar) 76–77
aku (lye) 105
closet floorboard (toko-ita) 13
closet pillar (toko-bashira) 79, 96, 99
alder (yashabushi) 159
alder finishing (yasha-shiage) 158–159
amimono (weaving with wooden strips) 43
Amur cork-tree (kihada) 34
ancient literature (koten) 86, 100, 121–123, 126
Aomori-hiba (hiba arborvitae, hiba) 65, 97; figure 45, Map 11
aphananthe (mukunoki) 158
Ashi’u-sugi (Ashi’u cedar) 77
arabori (rough carving) 55, 57
aradori (gouge for rough turning) 62; figure 43
arakashi (green oak) 13, 37; Table 5
ara-kezuri (rough planing) 49
argillaceous earth powder (tonoko) 159
aromatic wood (kôboku) 95, 119
aloewood (jinkô) 95
ashhaku-atezai (compression wood) 113
asunuro (hiba) 25, 40, 53, 63, 70, 84; Table 5
atezai (reaction wood) 113
axe (ono) 61

B
“bamboo grass” figuring (sasa-moku) 78, 144;
figures 71, 73
bamboo-leaved oak (shirakashi) 13; Table 5
“bamboo shoots” figuring (takenoko-moku) 33, 140, 144
bandoline wood (tabunoki) 13, 35; Table 5
banned trees (chôjiboku) 84
bantsu (latewood) 31, 117; figure 4
bare-wood finish (kiji-shiage) 63, 154
bark (jûji, gai-jûji) 28–29; figures 3–4
base surface to which lacquer is applied (nurishita) 56, 63
basket for steaming (seirô) 46, 64; Map 8
bead tree (sendan) 74; Table 5
bending-roller (magegoro) 67
beni-hi 82
benimatsu (Korean pine) 27–28, 80–81
bentwork (magemono) 19, 43, 46–47, 64, 97, 113, 152; Map 8
betsu-me (vernacular name, non-standard name) 21, 25
bigleaf podocarp (inumaki) 53, 100
Bishû hinoki 79–80, 84
birds-eye figuring (chôgan-moku) 35, 144
blank (genzai) 61
blank situated horizontally in the log (yokokiji); figure 36
blank situated vertically in the log (tatekiji) 60; figure 36
bracket arm (hijiki) 127
broad-leaved tree (kôyûju, katsuyôju) 83, 87; Table 11
brushing technique (uzukuri) 153, 158–159; figure 126
Buddhist altar (butsudan) 122
Buddhist sculpture (butsuzô) 15, 17–18, 43, 57, 86, 94, 97, 107, 112, 120–125, 143, 149, 162
budô-moku (“grapes” figuring) 34
buna (Japanese beech) 10, 14, 95
buried Japanese cedar (jindai-sugi) 81, 85–86, 95; Table 14
buried wood (umoregi) 86, 95
bushi (sculptor of Buddhist images) 17, 122–123
butsudan (Buddhist altar) 122
butsuzô (Buddhist sculpture) 15, 17–18, 43, 57, 86, 94, 97, 107, 112, 120–125, 143, 149, 162
byakudan (sandalwood) 57, 86–87, 120, 162
このプレビューでは表示されない頁があります。
Second Edition

Wood and Traditional Woodworking in Japan

発行日——2011年3月30日 初版第1刷
2016年3月1日 第2版第1刷
定価——カバーに表示しております
著者——Mechtild Mertz（メヒティル・メルツ）
発行者——宮内 久

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ISBN978-4-86099-223-8 C3372
Printed in JAPAN

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