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The Textile Terminology in Ancient Japan

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The Textile Terminology in Ancient Japan¹

Mari Omura and Naoko Kizawa

This paper investigates key Japanese words related to textiles and their production in ancient Japan that is during the 1st millennium AD. At this time the language known as ‘Old Japanese’ evolved and eventually systems for writing it down emerged, based on borrowing the Chinese characters. Textiles used for clothing, coverings, tax items, and ritual objects played an integral role in the society, and thus terms related to textiles provide insight into the life style, politics, religion and economy of Japan as it emerged from a tribal-based localized society into a centralized nation state. The linguistic study also points to cultural pathways along which inventions, materials, and processes passed, tying the

island country to the distant areas on the neighboring continent.

Words, their meanings, and their written forms change over time, making it difficult to pinpoint clear definitions. We have therefore approached the subject from several directions in hopes that superimposing the information from each will help clarify the picture. The core of the essay presents terms in the textile section of the earliest Japanese dictionary. It supplements these with examples of the use of the words in ancient Japanese literary resources and with iconography. The second half turns to actual tools excavated at sites ranging from the 1st millennium BC through the 1st millennium AD.

1. We would like to express our sincere gratitude for all the individuals and institutions who co-operated in this study and to Monica Bethe (Director, Medieval Japanese Studies Institute, Kyoto) who went over the English. Detailed comments on the material for dyeing and weaving tools were provided by Joy Boutrup, Chikayo Kawabe, Akiko Miyazaki, Nobue Nakama (University of the Ryukyus), Akira Shimura, and Monica Bethe. We are most grateful also to Marie-Louise Nosch for inviting us to contribute this theme, to Elizabeth Barber for proofreading, and to Professor Kazuhiko Yoshida (Graduate School of Letters, Kyoto University) and Junko Higashimura (University of Fukui) for giving appropriate advice or ideas to construct the thesis. We would like to thank Dr. Margarita Gleba (MacDonald Institute, Cambridge University) for proofreading and for leading us to the archaeological textile field in the West. Photographic materials and drawings were kindly provided by the followings: The Fukuoka City Board of Education in Fukuoka Prefecture, the Iwata City Board of Education in Shizuoka Prefecture, the Kanagawa Archaeology Foundation in Kanagawa Prefecture, the Kikugawa City Board of Education in Shizuoka Prefecture, the Kobe City Museum in Hyōgo Prefecture, the Komatsu City Board of Education in Ishikawa Prefecture, the Mie Prefectural Center for Excavated Properties, the Munakata Taisha Shinto shrine in Fukuoka Prefecture, the Shimotsuke City Board of Education in Tochigi Prefecture and the National Diet Library.

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The earliest use of Chinese characters in Japan appears as inlaid inscriptions found on some excavated iron swords and cast bronze mirrors dating to around the 5th century AD. Until then the Japanese had no writing system, though China already had a well-developed one and a nationwide political system. Inscriptions found on wooden tablets and Buddhist sculptures show that in Japan a systematic writing system started about the early 7th century AD at the same time as a nationwide administrative system has emerged. It is believed that the innovative Japanese use of Chinese characters merely for their sound, known as Man'yōgana, in order to express elements of their grammar not found in Chinese, such as particles, started about the late 7th century.²

The terms concerning textile materials and production first appeared in the Chronicles of Japan such as *Kojiki* (edited in AD 712) and *Nihon Shoki* (edited in AD 720). These texts trace the genealogy of the imperial family from historical figures back to mythological times. In the former text, for example, the fiber of wisteria (*fuji* in Japanese) is mentioned as a material for weaving, and the Japanese madder (*akane* in Japanese) as a dye material.³ In the latter, textile terms are reflected in the names of families or clans attached to the Court or government during the Asuka period (6th-7th centuries AD), such as *Nishikgoribe* <nishiki+ori+be ("compound-weave weavers clan"), *Kinunui* <kinu+nui+be ("garment tailoring clan"), etc.⁴

Sources

About the end of the 1st millennium AD in the 930s, one of the earliest dictionaries called the *Wamyō Ruijushō* or *Wamyōshō* was edited by a poet and man of letters, Minamoto no Shitagō, at the request of the Emperor Daigo's (885-930) daughter, Princess Kinshi. It includes vocabulary for textile technologies, fabrics and clothing. In addition, the *Engishiki* (Codes

of the Engi Era), written between 907-927 (the Engi era: 901-923) details regulations of dress, including their production during the Heian period.⁵

It is significant that most of the textile terms found in these Heian-period sources were already in use around the 7th to 8th centuries (the Asuka and Nara period), as evidenced by the *Man'yōshū*, a compilation of older and newer poems edited in 759. This continuity of textile terminology corresponds to the continuous use of similar tools and materials for the textile production during ancient times.

Some of the terms are also found in the documents edited in the *Shōsōin-monjo* (Documents from the *Shōsōin* Repository) dating mostly to the first six decades of the 8th century. Many of these documents concerned the office managing the copying of sutras. The paper for this national project was frequently dyed, and the materials used for dyes, often also used for medicines, can be found mentioned in it.

Because some of the tools, such as spindle whorls and beaters (probably for back strap looms), were used long before the development of the Old Japanese language, it is important to go further back in time and look at related archaeological remains throughout Japan. The earliest fabrics are of twinning excavated from the Neolithic (Jōmon) sites. These are thought to have been made with weights and bars. Woven textiles have been found from the late Neolithic (Jōmon period) and the early Bronze/Iron Age (Yayoi period).

The mention of textile production at the end of the Yayoi period appears in Chinese documents on Japan, but exactly when bast fiber weaving and sericulture began in Japan is still open to debate, particularly since carbon 14 dating suggests pushing the beginnings of the Yayoi period back to around 800 BC. It is at the sites (e.g. Sasai site, Fukuoka Prefecture) dated to this period where the earliest wooden textile tools (presumably for weaving circular warped cloth⁶) were excavated.

2. Inaoka 1997, 407-429.

3. Yamaguchi & Kōnoshi 2004, 278-279. 88-89. Here the name of Japanese madder is written 'atane'.

4. Kojima *et al.* 2004, 174-175.

5. Kuroita 1965.

6. Higashimura 2008.

Table. 1. Chronological table of Japan.

Paleolithic	200,000(?)–11,000 BC (*13,000 BC by AMS)	Early, 200,000(?)–30,000 BC Late, 30,000–11,000(or 13,000) BC
Jōmon (Neolithic)	10,500–400 BC (*800 BC by AMS)	Incipient, 10,500–8000 BC Initial, 8000–5000 BC Early, 5000–2500 BC Middle, 2500–1500 BC Late, 1500–1000 BC Final, 1000–400 (or 800) BC
Yayoi (Bronze and Iron Ages)	400 BC (*800 BC by AMS)–about AD 250	Initial, 400 (or 800) BC–300 BC Early, 300–100 BC Middle, 100 BC–AD 100 Late, AD 100–250
Kofun	About AD 250–600	Early, AD 250–400 Middle, AD 400–500 Late, AD 500–600
Asuka	AD 6 th century–710	
Nara	AD 710–794	
Heian	AD 794–1185	
Kamakura	AD 1185–1333	
Muromachi	AD 1333–1573	
Momoyama	AD 1573–1603	
Edo	AD 1603–1868	
Meiji	AD 1868–1912	
Taishō	AD 1912–1926	
Shōwa	AD 1926–1989	
Heisei	since AD 1989	

(cf. *Ancient Japan* by the Arthur M. Sackler gallery, Smithsonian Institution and the Agency for Cultural Affairs.1992)

*Calibrated AMS dating are referred to the catalogue of the "『発掘された日本列島 2014』 Hakkutsu sareta Nihon-retto 2014 (Exhibition of Excavations in the Japanese Archipelago 2014)" by the Agency for Cultural Affairs. Asahi Shimbun Publications Inc.

Map 1. Map of the sites.

Senchū Wamyō Ruijūshō (Dictionary of Japanese words with notes)

The *Wamyō Ruijūshō* dictionary of Japanese is based on one style of Chinese dictionaries, like the *Erya* 爾雅 (the 3rd century BC), and covers vocabulary for various fields, including textiles, noting the source, the meaning, the annotation, the Chinese-derived pronunciation and the Japanese reading, using the Man'yōgana. This kind of dictionary was required by an increasing number of educated readers, including women like Princess Kinshi, who wished to read and understand texts written in Chinese, including records and tales. Most of the official documents and academic pieces were written in Chinese. Although the original manuscript of the *Wamyō Ruijūshō* was lost, it was copied and exists today in variant texts (printed and manuscript versions). What follows is based on the *Senchū Wamyō Ruijūshō*⁷ revised by the Japanese scholar Ekisai Kariya, in 1827 during the Edo period. He compared several versions of the texts in great detail providing a clear overview of the material.

Man'yōshū

The anthology *Man'yōshū* (ten thousand leaves collection) was edited by Ōtomo no Yakamochi (about AD 718-785), a famous poet during the Nara period. In the *Man'yōshū*, over 4500 pieces of *waka*, traditional Japanese poems, are collected. They include poems by people of all ranks, composed during 400 years before AD 759. The poems contain many native Japanese words, called *wa-go*, and show little Chinese language influence. The original texts are lost, but the earliest poems seem to have been written down using Chinese characters purely as phonetic symbols known as the Man'yōgana.

We will introduce how these words were used to represent the scenes in the poems.⁸ It is difficult for modern readers to understand the poems in their

original orthography. They were written down using Chinese characters both for meaning and at other times for phonetic value and several different characters could express the same sound.

Terms Appearing in *Senchū Wamyō Ruijūshō*

Here we have kept the category and the word order as it appears in the *Senchū Wamyō Ruijūshō*. According to the classification, the terms for cloth and clothing (costume) are categorized independently under the main heading (*bu*, literally section or part). The terms for tools for cutting (*tatsu* or *kiru*: to cut) and sewing (*nufu*: to sew), dyeing (*somu*: to dye < *shimu*: to soak into, in modern times it is written *someru* and *shim-iru*), weaving (*oru*: to weave), sericulture (*kogahi*), interior *etc.* correspond to subheadings (*rui*, literally kind or sort), which are included under the main headings for the 'furnishing'. This paper focuses on the terms related to cloth and tools for textile production.

Although the headings are originally Chinese terms written in Chinese character, here they are replaced with the Japanese style reading corresponding to those found in the text.⁹ Their sounds shown here are based on the old use of *kana*, the Japanese syllabary at that time. Because the modern use of *kana* appeared in instructions given in 1946,¹⁰ until then the old use of *kana*, which started at early Heian period, had continued almost uninterrupted with few changes. It is said that in many cases the sound would have shown the characteristic of those pronunciations from the South Chinese dialect called Wuyin.¹¹ If there are multiple Japanese readings, they are written down together. The problem is that some of the terms have not been given native Japanese words in the dictionary, which are to be replaced as headings here. Ōtsuki mentioned that it was because some terms would have been read using the Chinese terms' sound and the rest would have no source to refer to in the author's materials even if they had Japanese style readings. Others

7. Kyoto Univ. 1999, 1-525.

8. Inaoka 1997.

9. Kyoto University 1999.

10. Tsukishima 2014, 11.

11. Tōdō 1995, 1584.

which show Japanese readings surely have the reference noted.¹² In the latter case the Japanese readings are covered by those from other parts of this dictionary or archaic word dictionaries. The former is placed in single bracket (), and the latter is placed in double bracket (()).

Since both Chinese and Japanese style readings have changed, these terms do not always correspond to modern ones. In addition, there are often multiple Chinese style readings for one Chinese character, depending on the region and period.

Illustrations are taken from an Edo-period publication of the *Wakan Sansai Zue*,¹³ originally edited in 1712 by Ryōan Terajima, and from the *Kishoku Ihen*,¹⁴ a manual for textile technology during the Edo period edited in 1830 by Masunari Ōzeki, one of the feudal lords.

The terms for silk and the bast fiber processing found in these books follow a traditional style that is consistent from ancient times through the end of the Edo period (middle of the 19th century) when Japan opened the country to foreign trade and diplomatic relations.

*Cloth*¹⁵

In the following, the Chinese-style reading reconstructed of the Early Middle Chinese, from the Sui to Tang dynasties or earlier¹⁶ of a character will be preceded by a ‘Ch’ for China, and the Japanese style by a ‘Jp’ for Japan. When needed, modern Japanese reading will be added for references preceded by a ‘MJp’.

The terms for the cloth, bast fiber cloth, silk cloth, consist of two parts. These include bast fiber cloth (Ch: pɔ̃^h, Jp: *nuno*) and silk cloth or fabric: (Ch: baijk/bɛ:jk, Jp: *haku-no-kinu*) and others. They are divided into patterned silk fabrics such as compound weaves and patterned in weft and warp faced twill, on the one hand, and plain weave and other materials on the other.

Terms for nishiki (compound patterned weave) and aya (patterned in weft and warp faced twills)

Nishiki: a general term for multicolored patterned weaves of various structures. At the time the dictionary was written, it probably referred to samite, a weft-patterned twill compound weave. In the Asuka-Early Nara period, *nishiki* referred to warp-faced compound weaves, introduced already in the 5th century, and weft-faced compound weaves, some with a plain weave ground but many with a twill ground, introduced in the 8th century. The dictionary specifies several types of *nishiki*: *ungen nishiki*, a samite with gradated stripes including small patterns, *koma nishiki*, compound weave with Korean (Koguryo) patterns, *ryōmen nishiki*, two-sided multicolored pattern weave, possibly a double weave. Because *nishiki* textiles were valued as highly as gold, the Chinese character for *nishiki* 錦 combines gold 金 as a radical on the left with silk fabric 帛 on the right.

Ori-mono/ kamuhata: 綺 (Ch: kʰjiě’/ kʰji’) woven cloth with a woven pattern in more than one color, *ori*<*oru*: to weave, *mono*: thing

(Tokachi): Fabric made from spun hare or rabbit hair. Headdresses (caps or hats) were made with this fabric. Rabbit is called Jp: *usagi* (Ch: t’o).

(Kaukechi): clamp-resist dye, Jp: *itajime*. Because the original heading is nowadays read *kyōkechi*, clamp-resist dye, this term seems to be confused with *kōkechi*, tie-dye, Jp: *yu-hata*, *yufu*: to tie or to knot, *hata*: fabric. Even though E. Kariya mentioned that later it was (and still is) called Jp: *itajime*. **Ita**: board(s), *jime*<*shimu*: to tighten. (MJp: *shimeru*). *Man’yōshū* poem no. 3791 mentions a dress with tie-dyed design sleeves.

Numu-mono: embroidery, *nufu*: to sew (MJp: *nū*), *mono*: thing or material. In the chronicles it is read *nuhimono*.

Aya: 綾 twill (often patterned in weft and warp faced

12. Ōtsuki 2004, 1,17.

13. Terajima 1824. Courtesy of the National Diet Library Digital Collection: the chapter entitled “Women’s handcraft tools”; info:ndjp/pid/2569720 [24]

14. Ōzeki 1830.

15. Kyoto Univ. 1999, 176-180.

16. Pulleyblank 1991; Tōdō 1995.

twill). *Man'yōshū* poem no. 3791 mentions a violet dress made of silk twill. (Ch:liŋ).

(Ra) / ((Semi-no-ha)): (Ch: la) Leno or gauze i.e. crossed warp weave called also *usu-mono* or *usu-hata*, in the Chronicles. *Usu*(<*usushi*): thin or transparent, *mono*: thing, *hata*: fabric. *Man'yōshū* poem no. 3791 mentions gauzy cloth. *Semi-no-ha* means wings of the cicadas.

Kome/kome-no-kinu: a type of patterned gauze-weave silk, E. Kariya suggests the reading: *kome*<*kagome* (woven pattern of the basketry, *kago*) and *kinu* (silk fabric) and suggests that the surface of this fabric looks like the spreading rice grains.

Katori: closely woven silk cloth with fine raw silk threads.

Terms for kenpu (kinu and nuno): (silk and bast fiber cloths)

Kinu: 絹 (Ch: kjwian^b) silk fabric. It seems that there exists a phonetic resemblance between these terms.

Neri-kinu(<*kinu*): degummed silk fabric

Ashi-kinu(<*kinu*): coarse silk fabric

Haku-no-kinu: fine (or thin) silk fabrics, thin plain weave

(Sha): gauze weave made of fine (raw) silk threads (Ch: ʃai/ʃe:)

Nuno: 布 bast fiber fabrics using the fiber of *asa* hemp, *karamushi* false nettle, or *ku(d)zu* (*Pueraria* lobata, Japanese arrowroot), etc.

Tezukuri-no-nuno: hand woven bast fiber cloth. *Man'yōshū* poem no. 3373 mentions the process of bleaching the *tedzukuri-no-nuno* in the *Tama* River (near present day Tokyo).

Asa (karamushi)-nuno: cloth made of false nettle, ramie, *Boehmeria* Jacq., such as *Boehmeria nivea*.

Tsuki-no-nuno: cloth for taxation. One of the taxes in kind, *tsuki*. Cloth is also accepted in order to

replace a labor tax, or corvée called *yō*.

Sayomi-no-nuno: cloth made of threads taken from the inner bark of the Japanese linden tree, *Shinanoki*. *Tilia Japonica* Simk (or lime tree, bass-wood)

Tani: cloth made for sale or trade, not for tribute.

Wata: silk floss

Tools and materials for textile production¹⁷

Cutting and Sewing

In ancient times in Japan, no vocabulary existed related to wool and cotton manufacture, though mention was made of cloth made from the hair of *usagi* (hare or rabbit). Yet, beautiful woolen felt carpets from the Nara period were stored in the *Shōsōin* Treasure House, possibly imported as gifts to persons of high rank. The words '*hitsuji*' (sheep),¹⁸ '*kamo*' (felt carpet) and '*ori-kamo*' (woven carpet) are found under the headings of 'animals' and of 'rugs/mats'. It is significant that even the Chinese might have borrowed their word for sheep from some form of Iranian or Tocharian language.¹⁹ The terms for tools related to cutting and sewing follow below.

Kara-usu: a (Chinese style) mortar for pounding cloth (in this case). The same style mortars were also used for polishing rice by stepping on a board attached to the mallet. *Kara* means "Chinese or foreign style".

Kinu-ita: a stone block on which clothes are beating to soften them. (MJp: *kinuta*)

Tsuchi: wooden mallet to beat (*utsu*) the clothes.

Kata-ki: woodblock carved with a pattern for dye-printing.

Mo-no-tachikatana: a knife for cutting clothes.

Takahakari: bamboo ruler (*taka*: bamboo, we now call it *take*), *bakari* is from *hakaru* (vb.), to measure.

Hari: needle (it is also used for medical treatment, such as acupuncture and moxibustion)

17. Kyoto Univ. 1999, 306-315.

18. Kojima *et al.* 2004, 534-535. In the *Nihon Shoki*, a camel (*rakuda*), a donkey (*usagi-uma*, literally a horse which has rabbit's ears, nowadays *roba*) two sheep and a white pheasant (*kigisu*, nowadays *kiji*) were mentioned as offerings from Paekche in the 7th year of Empress Suiko (599 AD).

19. Mallory & Mair 2000, 229.

Hari-tsutsu: cylindrical needle case.

Oyobinuki: ring-shaped (metallic) thimble. Nowadays we call it *yubinuki*, *yubi* means finger(s) and *oyobi* is its old form. *Nuki* comes from *nuku* which means through something.

Noshi: a kind of iron (or presser), a dipper-shaped metallic tool with a charcoal fire to make clothes and fabric smooth.

Materials for dyeing

The terms for dyestuffs come next. They are mainly names of plants. We have added their Latin names after the Japanese terms for general identification. The dyes were used not only on fabrics, but also to dye papers for sutra-copying. Dye materials were important tribute items and are mentioned in the *Engishiki*. Previous studies about the historical use of dyestuffs proved helpful to our study.²⁰

Color played an important role as an indicator of rank in the Japanese government of ancient times. The concept of wearing garments distinguished by rank-regulated colors was adopted along with other aspects of the Sui and Tang dynasty Chinese administrative system, which was formulated in Japan as legal code known as *ritsuryō*. This included stipulations about textile production, taxation (including threads, fabrics, and dyes) and designation of court ranks. In 603, Prince Shōtoku (AD 574-622) established the “*Kan-i* (crown rank) *jūni-kai* (12 levels)”, a system whereby court ranks were distinguished by the color of the headgear.²¹ Lighter and darker shades of six colors were used to indicate 12 ranks in the court. The order of colors as set by Prince Shōtoku from the highest rank down was as follows, though this order changed over time: *Murasaki* (purple or violet)/ *Awo* (blue)/ *Aka* (red)/ *Ki* (yellow)/ *Shiro* (white)/ *Kuro* (black).

These and other colors were dyed with the following plants.

(Suhau): LEGUMINOSAE *Caesalpinia sappan*, L. (sappan wood). Nowadays it is written *suō*.

(Native to India and Malaysia). *Suō* chips from the Nara period are still stored in the *Shōsōin* Repository. *Suō* was used both to stain wood and to dye fabric and sutra papers. Dyes reds and purples.

Hanishi: ANACARDIACEAE *Rhus* L. *Rhus succedarea* L. (Japanese wax tree). MJp: *haze*. Dyes tan to brown.

Kihada: RUTACEAE *Phellodendron amurense* Rupr. (Amur Cork). Used as dyestuff for sutra scroll papers and binding ribbons. Dyes yellow.

Kuchinashi: RUBIACEAE *Gardenia jasminoides* Ellis. (Gardenia) Dyes a warm yellow.

Tsurubami: FAGACEAE *Quercus* L. *Quercus acutissima* Carruth. MJp: *kunugi*. Acorn caps. Dyes grey to black. *Tsurubami*-dyed garments are mentioned in *Man'yōshū* poems nos. 1311. 1314. 2965. 2968 and 4109.

Akane: RUBIACEAE *Rubia akane* Nakai. (Japanese madder). Dyes red. According to the *Engishiki*, *akane* was included among the agricultural tributes through the Heian period, but the ancient dye methods were lost by the Edo period or earlier. Recently, Akiko Miyazaki tried to reconstruct the technique using the material and tools found in the *Engishiki*.²² She discovered that both brown rice (*genmai*) and polished rice (*hakumai*, literally white rice) would have been fermented to extract the red (*aka*) colorant from the plant root at that time. The Japanese name of this plant *aka-ne* (red root) comes from the red color of the plant roots. In the *Man'yōshū*, *akane* is used to express the brightness of evening and the light of day in poems nos. 20. 169 and 916. (cf. *aka-shi* (adj.) means bright, light). (MJp: *akarui*)

Murasaki: BORAGINACEAE *Lithospermum officinale*, L. subsp. *erythrorhizon* (Sieb. et Zucc.) Hand.-Mzt. (Gromwell). Dyes purple.

Textiles and threads were mordanted with the camellia ash, which is known to contain aluminum, and then dyed with *murasaki* root. According to the *Engishiki*, *murasaki* was an agricultural tribute during the Heian period. The purple

20. Uemura 1979; Gotō & Yamakawa 1937.

21. Kojima *et al.* 2004, 540-542.

22. Miyazaki 1997, 1-21.

died with *murasaki* was restricted to the people of the highest rank in the Court.

In the *Man'yōshū*, *murasaki* appears as a plant that grew in a field guarded for the Imperial Court (no. 20), also as a color of threads (no. 1340), of clothing (no. 3791), and as a dye for clothing (nos. 395 and 3101). In poem 3101, the use of ash as a mordant is mentioned. Other poems including the term *murasaki* are as follows: Nos. 21, 395, 1825, 2974, 2976, 2993, 3099 and 3500.

Kure-no-awi: (MJp: *kurenai*) ASTERACEAE *Carthamus tinctorius*; safflower, (originally introduced from West Asia). Dyes pink to red (also yellow). Jp: *kure* refers to the name of the Chinese kingdom *Wu* (AD 222-280). The flower petals are used to dye red though in other countries they dye yellow. Recent analysis using fluorescence spectrometry on *Shōsōin* items revealed that safflower red was used to dye a carpet, an undergarment, a gown with tie-dye design, and a pair of shoes.²³ In the *Man'yōshū*, *kurenai* is often mentioned as a color that fades easily. The term is found in following poems; Nos. 1044, 1297, 1313, 1742, 2623, 2624, 2655, 2827, 2828, 3877, 3969, 4109 and 4157.

Awī: (MJp: *ai*) Two plants names are mentioned here as the contents of the other book of pharmacy or pharmacology *Honzo Wamyō* written in the Heian period (about 918) by Fukane Sukehito. One is *tsubaki-awī*, The original Chinese term means 'wood indigo' (*ki-awī*). Although we do not know exactly which plant corresponds to it, there are two possibilities; one is *ryūkyū-ai*, ACANTHACEAE *Strobilanthes flaccidifolius*, Nees. The other is *indo-ai*, FABACEAE *Indigofera tinctoria*, L. The other is *tade-awī*: POLYGONACEAE *Polygonum tinctorium* Lour. (Originally imported from China for cultivation in Japan²⁴). Dyes blue. Lake colour called *awishiru* (sap of *awī*) taken from *kiawī* was mentioned as well.

Note that the *Yama-awī*; EUPHORBIACEAE *Mercurialis leiocarpa*, Sieb. et Zucc., was native

to Japan, but is missing from the *Wamyō Ruijūshō*, though it is found in the *Engishiki*. The *Man'yōshū* mentions it as applied by rubbing it into cloth to print blue color (No. 1742). The usage of the *Yama-ai* has already been forgotten in modern days though it had been used to decorate the imperial garment for the coronation ceremony, which is called '*omi-goromo*'. Kiichi Tsujimura studied the materials and reconstructed the dyeing method.²⁵ He discovered a place where this plant grew naturally and investigated how it can be successfully printed. *Yama-awī* is named after the color of *awī* indigo, though it does not contain indigotin.

Kaina: *Miscanthus tinctorius*. Dyes yellow. (MJp: *kariyasu*)

It was used to dye sutra papers according to the *Shōsōin* documents.

Tsukikusa: *Commelina communis* L.; (Dayflower). Dyes an impermanent blue.

The water-soluble colorant in the dayflower is squeezed from the flower and used to print cloth by rubbing, though the color fades easily (*utsurofu*, MJp: *utsurou*). In the *Man'yōshū* the impermanence of the color appears in poems: nos. 583, 1255, 1339 and 1351.

Aka-hiyu: AMARANTACEAE *Amaranthus mangostanus* L.

Akaza-no-hahi: ash (MJp: *hai*) from the plant called *akaza*; CHENOPODIACEAE *Chenopodium album* var. *centrorubrum*. Used for degumming. According to the *Engishiki*, *wara-bai* (straw ashes) were prepared to degum the silk threads.

((Hisakaki-no-hahi)): ash of the *hisakaki* tree and leaves, THEACEAE *Eurya japonica* Thunb. It is suggested that it would be a kind of *tsubaki-no-hahi*, ash taken from camellia. Used as a mordant. Aluminum is richly contained in its ash. The *Man'yōshū* poem no. 3101 indicates that *murasaki* dyestuff requires ash (presumably taken from *tsubaki*) for mordanting.

Aku: lye. Water poured through ashes leaches the alkaline and mineral content and produces lye, used

23. Nakamura *et al.* 2014.

24. Kitamura & Murata 1973, 312.

25. Tsujimura 1984.

a.

Fig. 1. A model loom (length: 48 cm, width: 16.7 cm, height of the front legs: 12.8 cm) : a) Side view (left); b) Back view (center); c) A boat shuttle (right center and lower) and a reed (right upper), 8th to 9th centuries AD, excavated from the ritual sites in Oki no Shima Island, Munakata Taisha Shinto shrine, Fukuoka Prefecture. (National Treasures) Courtesy of the Munakata Taisha Shinto shrine.

as an alkaline used for degumming or as a mordant depending on the mineral content.

Weaving tools and materials

The *Senchū Wamyō Ruijūshō* lists weaving tools next. To illustrate this section, we have used pictures of ancient excavated textile tools, of ritual tools from shrines, such as the Munakata Taisha Shinto shrine²⁶ and later drawings taken from an Edo-period encyclopedia edited in 1712, the *Wakan Sansai Zue*²⁷ and

from an early 19th-century textile production manual, the *Kishoku Ihen*.²⁸ Although these drawings are more recent than the period under discussion, archaeological evidence and early paintings suggest the general form of many of the weaving tools did not alter significantly until recently.

((Hata)): loom, see Fig. 1

Taka-hata: (treadle loom, literally ‘high-loom’) was used for weaving silk fabrics. E. Kariya presumes that this included patterned weaves like compound

26. Munakata Taisha Hukkōkisei-kai (ed.) 1979, Pl. 93

27. Terajima, 1824 (info:ndjp/pid/2569720 [24])

28. Ōzeki, 1830.

b.

c.

Fig. 2. Miniature textile tools including *tatari* (fiber stands, height of the center one: 14.4 cm.), *tsumi* or *tsumu* (spindle whorl), *kase* or *kasehi* (niddy nodd), *woke* (a container for spliced threads) and *kushi* (comb) or beaters. 6th to 9th centuries AD, excavated from the ritual sites in Oki no Shima Island, Munakata Taisha Shinto shrine, Fukuoka Prefecture. (National Treasures) Courtesy of the Munakata Taisha Shinto shrine.

weaves and patterned twills.²⁹ He was inspired by the opinion of Kotosuga Tanikawa, an 18th-century scholar, who argued that the character for woven patterning 繪 (*e*) can also be read as *hata* indicating the patterns are woven on a loom 機 that has some mechanism to produce patterns.

The exact form, however, of the *takahata* or *takabata* loom used in ancient times remains unknown. Old texts supply several hints. For instance, a record from the 8th century concerning the origin of the Dai'anji Temple³⁰ in Nara, lists *takahata* among cloths for men's garments, noting it is red, but giving no explanation of its weave structure or pattern.

References to looms in the *Man'yōshū* use the term *tana-bata* (literally 'shelf-loom'). *Man'yōshū* poems nos. 2027 and 2040 refer to women weavers as *tana-bata tsu-me* (shelf-loom-weaving girl). No.2062 describes the *maneki* (foot pedals, literally *fumu*: to tread or step on with the feet + *ki*: wood), of her loom being set up by the riverside, which would enable her lover to cross a river, the Galaxy, using them as a bridge, a reference to a local myth.³¹ Whether the *tana-bata* was a type of *taka-bata* needs further research.

The Chinese character for a loom 機 *hata* is composed of a radical indicating the material the loom is made of: 'wood' 木 and the construction

29. Kyoto University 1999 (E. Kariya, *Senchū Wamyō Ruijūshō*), 310.

30. *Dai'anji Engi Ruki Shizai Chō*, 19th year of the Tenpyō Era (AD 729-749).

31. Perhaps by association with "weaving girls", the Japanese came to call their seasonal rites on the seventh day of the seventh month *Tanabata* and incorporated into them the Chinese tradition of honoring the annual tryst of the weaving girl (the star Vega) with her Oxherd lover (the star Altair).

Fig. 3. Clay figurines from the 6th century Kabutozuka Kofun burial mound:

- a) Side view of a frame back strap loom (length of the left side frame: 56cm);
 - b) & c) Reconstruction of the loom with a weaver by CG, the side and back views;
 - d) & e) A part of loom without frame. (width of the warp threads' portion: 9 cm).
- Courtesy of the Shimotsuke City Board of Education, Tochigi Prefecture.

of the loom showing foot pedals attached to string heddles and/or harness. This style of character is found after the Warring State period in China. Its predecessor does not have the part for wood.³² The historical development of the looms would have been reflected in the form of the character.

The left side of the character means wood (material to make the loom). The foot pedals are connected to the heddles (*he*) with threads of harness, as the top right part indicates. This part is the simplified version of the original letter composed from threads and pedals. The bottom right part indicates the sound of the character.

This same 機 character was read as *wakatsuri* or *wokotsuri* in a tale in the *Nihon Ryōiki* (Miraculous Tales of Buddhism, compiled in the early 9th century AD).³³ The tale relates how a crane with *wakatsuri* or *wokotsuri* (probably a kind of pulley) was used to rescue people who had fallen into a hole in the mountain. E. Kariya goes on to comment that this might be the origin of the name for heddles, nowadays called *kazari*. Perhaps the loom might have used pulleys to operate the heddles.

Hi: shuttle, boat shuttle (right center and lower).

Wosa: reed. Fig. 1c (right upper) (MJp: *osa*)

Reeds in Japan were generally made of finely split bamboo. This tool was not always required to weave cloth. Beaters that seem to have been used for back strap looms have been found in many archaeological sites in Japan. The wood used tended to be hard wood. Wooden combs *kushi* are sometimes mentioned in a context of combing tangled fibers or threads for textile preparation, though

Fig. 4. He (heddles), ayatori from the Kishoku Ihen (Saigusa 1946, 542).

in the *Wamyō Ruijūshō* combs were categorized among the cosmetic tools.

The *Man'yōshū* poem no. 1233 describes young girls combing the warp (of bast fiber) with a “*magushi* <*ma-kushi*: excellent comb” on the loom. Its historical development and typological analysis reveal some interesting aspects in the context of ritual and cultural interaction among areas.³⁴

Chikiri: warp beam. cf. *Chimaki* (cloth beam)

He: heddles; Fig. 4 (During the Edo period it was also called *ayatori*, *kazari*, *mojiri* and *kakeito*)

Kutsuhiki: frame back strap looms; Fig. 1

These looms have a foot pull-rope to operate one heddle with the weaver's foot. *Kutsu* literally means ‘shoe(s)’, *hiki* <*hiku*, to pull. A 6th century clay model of this style of loom was recently found among the clay figurines excavated from the late Kofun period Kabutozuka burial mound in Tochigi Prefecture, northern Tokyo area of the Honshū Island. A part of another clay model presumed to be a back strap loom (for two-layer circular warp) without frame was also uneaed (Figs. 3d & 3e).³⁵

32. Katō 1970, 144-146.

33. Izumoji 1996, 146-148.

34. Kizawa 2011; 2014, 47.

35. Shimotsuke City Board of Education (ed.) 2014.

It is significant that the Chinese term which is used as the heading 臥機 in the dictionary literally means ‘lying loom’. It does not mean foot or shoes at all. In addition, the depicted Chinese looms had already been prepared with pedals to operate the heddles since at least the Later Han dynasty. Japanese style reading means that they would have used a foot pull-rope to operate the heddles traditionally in Japan.

In general, the loom in East Asia is not upright (except for that of straw mats ‘*mushiro*’ and/or bamboo blinds ‘*sudare*’ and ‘*misu*’ producing) though in the Orient both types are included. In order to understand the reason for which the character meaning “lying” is added to the Chinese term, further discussions will be required.

The *Engishiki* mentions a ritual concerning garments made for the *kami* god twice a year, in spring and autumn. The production of textiles for goddesses was treated as sacred work that was carried out in two different shrines near the grand shrine of Ise in Mie Prefecture, where the sun goddess Amaterasu-omikami and the goddess of grains Toyouke-no-omikami are enshrined as the ancestors of the Imperial Household. In one shrine, silk threads were prepared and woven by the Hattori clan: *hata* (loom) + *ori* (<*oru*, to weave). The woven cloth was called *nigitaie*, fine and soft cloth. In the other shrine, *asa* (or *wo*, hemp and false nettle) threads were prepared and woven by the Woumi clan: *wo* (hemp) + *umi* (splice or ply-join). The woven cloth was called *aratae*, coarse cloth.

The existence of the two clans specializing in different fabric production suggests that initially weaving for the Imperial family was a localized art. The Hattori (*hata-ori*) clan (*be*) would have specialized not only in weaving but also in tailoring. It is believed that the system was based on that of Paekche, and was replaced in 645 after the Taika Reforms. Again, arguing from the semantics of names, the splicing method of joining bast fibers base to tip into long threads must have been wide spread since we can find villages called *Woumi* in various places throughout Japan. The members of the *Woumi* clan belonged to the upper clan Kam-be, (*kami*, god) section or clan for

ritual, which was attached to the shrines and paid taxes only to the shrine. The hemp and false nettle fibers were used for important Shrine purification ceremonies called *harahe*, MJp: *harai*, literally meaning to remove or get rid of evil spirits.

The *Engishiki* mentions gold- and silver-plated bronze tools including *tatari*, *woke* (container for spliced threads originally made of steamed and bent wood), *kasehi*, and *tsumi*. Twenty-one kinds of holy treasures, including textile production tools, such as spindles and fiber stands, have prepared for each 20-year reconstruction of the grand shrine of Ise over the past thousand and more years. Actual examples from the early Heian period still exist. A gilt bronze *hata* (loom) and *hi* (shuttle) from the 8th to 9th centuries (Fig. 1) were found in the Munakata Taisha Shinto shrine located on two small islands in the open sea of Genkai *nada* and northern Kyūshū where three goddesses of sailing, daughters of the Sun goddess, are deified. Munakata Taisha Shinto shrine consists of three shrines (Okitsu-gū, Nakatsu-gū, and Hetsu-gū) situated in different places. Okitsu-gū is enshrined on the small island Oki-no-Shima, half way between Japan and Korea. Nakatsu-gū is enshrined on the small island Ōshima and Hetsu-gū is located on the Kyūshū Island. The shrine has long been held sacred and these tools seem to have been made for the goddess’s use.

Maneki: foot pedals. Nowadays this term is used for harness levers to move a heddle (see model loom, Fig. 1)

Nukikaburi: bobbin winder or winding.

Kuta: bobbin core. MJp. *kuda* literally means ‘tube’.

Wi-no-ashi: cloth beam (see model loom, Fig. 1).

Literally, the term means foot of the wild boars though the meaning is hoof(s) since the both beam ends look hoof-like in shape. 猪 *Wi* means the wild boars and *ashi* means feet (or foot). (MJp. of the wild boars: *i-no-shishi*).

A part of the loom onto which the woven cloth is wound up.

Asa: (Ch: mai/mɛ: / Jp: *wo*, *so*)(MJp: *o*): a generic term referring to bast fibers, such as hemp: *taima* (*Cannabis sativa* Linne) (Ch:da^h/daj^h+mai/mɛ:) and false nettle (various species of *Boehemia*, in

the family of the *Urticaceae*, often called ramie or Chinese grass in English, and referring mainly to *cho-ma* (Ch: driǎ'+mai/me:) or Jp: *karamushi* (*Boehmeria nivea* L. Gaud). Kitamura and Murata mention that the *Boehmeria nivea* L. Gaud was brought from China already in ancient times.³⁶

To splice: *umu* is the verb used for making long threads out of bast fibers (*asa*) like hemp, false nettles, and *bashō* (banana plant fiber). Various splicing or ply-joining methods have been used, but an important key for making all ply-joins (*ito-umi*) is “to join the base of the new element to the tip of the old element by plying them together with a Z or S twist, or a combination of the two.”³⁷

To twist: *hineru* or *yoru*, general terms for adding twist

To spin: *tsumugu*, for silk floss and cotton

In the *Man'yōshū* poem no. 2990, young girls splicing beaten bast fibers (*uchi-so*) set on *tatari* (fiber stands) think of their lovers, their activity of making continuous thread serving as a metaphor for the continuous longing in their hearts. Here, the word *umu* (splice) is pronounced the same way as *umu* (grow tired), creating a play on words, with *umu* meaning both tireless effort for ‘splicing’ and longing for someone without ‘getting tired’.

Heso: hollow thread balls. The navel is also called *heso*.

Tools and materials for silk thread production

Kahiko: silkworm (*Bombyx mori* ; silkworm moth) (MJp: *kaiko*).

Mayu: cocoons.

Kuha-mayu: wild silkworms (*Bombyx mandarina*) grown in mulberry trees (MJp: *kuwamayui/kuwako*). *Man'yōshū* poem no. 3350 describes clothing made of silk threads from silkworms fed with fresh mulberry leaves.

Ko-guso: silkworm *kuso* (excrement)

Ebira: silkworm spinning frames.

Kuha and tsumi: mulberry trees including *morus alba* and *morus bombycis*.

Ito: threads reeled from silk cocoons.

Shikeito: threads from the outer parts of the cocoon.

(Waku): frame spool (Fig. 5) (Ch: *fiuak*).³⁸ Tōdō mentions that this pronunciation reflects Wuyin during the Sui and Tang dynasties.

Kurubeki: (literally ‘reverse turn’) swivel, rotating device on which the skein (*kase*) is set, and from which the thread is drawn out. Although we do not know the exact shape of this device from the name as we do not use this word nowadays but we can suggest its function by the heading written in Chinese characters. Ekisai Kariya suggested that it was *mai-no-ha* (*mafu* means to turn around, *ha* means blade), turning around horizontally to make skeins, which were still called *kurubeki* in the Kantō region, eastern Japan during the Edo period.³⁹ He also mentioned that it was found in the Chinese *Sancai Tuhui* written in the early 17th century, which was the model of the *Wakan Sansai Zue*, though this type of swivel dated back to the 14th century *Nung Shu* (Book of Agriculture) written by Wang Chen.

A dictionary of Old Japanese states that the noun *kurubeki* derives from the verb < *kurubeku* (also *kurumeku*): “to turn around, rotate”.⁴⁰ It gives an example of the phrase “turn around like a top” from the 12th century *Konjaku Monogatarishū* (Anthology of Tales from the Past; vol. 20 no. 6). Probably it rotated horizontally (Fig. 6). Some of the ritual clay objects series found from the Myōgajima Kofun no.5 mound in Shizuoka Prefecture show their rough shapes during the 5th century (Middle Kofun period) (Figs. 6c & 6d Important Cultural Properties).⁴¹

The *Man'yōshū* poem no. 642 compares King Yuhara's feelings to a thread, which if it frays/

36. Kitamura 1973, vol. II, 339.

37. Hiroi & Nagano 1999, 368.

38. Tōdō 1995, 975.

39. Kyoto University 1999, 313-314.

40. Ohno *et al.* 1982, 424.

41. Iwata City Board of Education 2003, 449, 627.

Fig. 5. Waku from the Wakan Sansai Zue. Courtesy of the National Diet Library.

strays or tangles, he will set on the *kurubeki* and fix. The phrase used is *kurubeki ni kakeru*, “to set on a rotating device” in order to bring the thread(s) together (縁, Ch; yen), a term used also to express a connection or relationship.

Ohoga: a silk reeling device to take the silk fibers from cocoons while they are being boiled. (MJp: *ōga*)

Tsumi: spindle whorl (cf. Fig. 2, lower right). It was and still is called *tsumu* <*tsumugu*, to spin, during and after the Edo period.

Tatari: standing skein pole holders

Usually three poles form one set for holding skeins while winding threads onto spools (Fig. 7).

The *tatari* (standing skein holder, Fig. 2) is also found in the Muromachi period (early 1600’s) drawings⁴² and Edo period publications. They have the same function and structure as that described in the *Wamyō Ruijūshō*. We have recognized that the term *tatari* refers to two different tools, a skein holder and a fiber stand used while ply-joining bast fiber threads, similar to the votive *tatari* shown in fig. 2, upper right.

Archaeological evidence

The Neolithic Period in Japan is named Jōmon (rope pattern) after the decorative impressions on the pottery using twisted cords, a practice that deserves special mention. Varied patterns were developed during the period that continued for about 10,000 years (10,000-400 BC). This technique required plying the plant fibers in S or Z directions. Sometimes they combined several twisted fibers together into one cord adding a counter twist. The technique is similar to rope making and also to ply-joining, though weaving had not yet developed. The discovery of weights (*omori*) made of stones and wood from this period suggests they made twined fabrics called *an-gin* (an<*amu*-, to twine or to net + *gin(u)* <*kinu*, cloth or fabric), though the precise technique is unknown.

Basketry and pottery production were already highly developed at this time. In Higashimiyō wetland shell mound site, Saga Prefecture and in the

42. *Shokunin Zukushie*, Kita-in Temple, Kawagoe City, Saitama Prefecture

Fig. 6. Mai-no-ha (or kurubeki?): a) & b) Two kinds of swivel named mai-no-ha from the Wakan Sansai Zue. Courtesy of the National Diet Library; c) & d) Ritual clay weaving tools from the Myōgajima Kofun burial mound no. 5.(Important Cultural Properties) Courtesy of the Iwata City Board of Education (2003, 449 and 627).

northern Kyūshū area, over 700 baskets and woven bags have been excavated. The basket's fragment is dating back to 5891-5790 cal. BC by AMS dating.⁴³ Ropes, braided bark and bracken in two-ridge, material for basketry, as well as a wooden combined comb were found.⁴⁴

The evidence of woven cloth appeared towards the end of the Jōmon to early Yayoi period (about

800~400 BC to AD 250). The earliest examples of tabby weave were found at the Hirajō shell mound site, Ehime Prefecture in the western part of Shikoku Island.⁴⁵

In the Yayoi period, before frame back strap looms (see above) appeared, simple stick back strap looms (*koshi-bata*) would have been used for weaving. Some wooden artifacts from the Sasai site, Fukuoka

43. Matsui 2006, 144.147.

44. Saga City 2009, (Fifth volume), 36, 38-39, 412-413, 420-423, 424-454.

45. Matsuura 2002, 13.

Fig. 7. Tatari (as standing skein holder) from the Kishoku Ihen (Saigusa 1946, 550).

Prefecture in northern Kyūshū are categorized as this type of textile tool. Although these artifacts have not been precisely dated, pottery fragments excavated from the same site is considered to belong to the final Jōmon period or early Yayoi period.⁴⁶ The excavated loom parts (Fig. 8a) are now thought to be a pair of bars for holding a circular warp (two-layer circular warp) engaging their v-shaped concave (Fig. 8a upper) and convex (Fig. 8a lower) edges,⁴⁷ though they were once considered to be weft beaters.⁴⁸ Their narrow ends would have been tied up with ropes and/or cords to fix them together with the weaver's back using a back strap. In addition, two clay spindle whorls were found at the same site (Fig. 8b).⁴⁹ This loom would have been the same type as that of the bronze figurines found from Yunnan, China, early Han dynasty, the loom with tension controlled using toes mentioned by Barber.⁵⁰ Flat rectangular

wooden boards (see Figs. 3d & 3e) have been found from the Kofun period, in exchange for the rod on one end. Some of them were partially cut off on one of its longer sides (presumably the base) to keep the lower warp threads in midair (Fig. 9).⁵¹

The area of the Sasai site is located near the open sea and from early on acted as a conduit through which rice cultivation, bronze-casting techniques, metal-smelting techniques, and weaving techniques arrived from the Asian Continent and the Korean peninsula. A gold seal given by the Chinese Emperor *Guwanwu* in the late *Han* dynasty in AD 57 was also excavated from this region. In addition, the so-called Indo-Pacific beads reached here already before the Christian era.⁵² It seems that those innovative technologies were not originally developed in the Japanese archipelago.

Furthermore, tools like the niddy-noddy called *kase* (柵) or *kasebo*, are found all over Japan. A wooden I-shaped tool from the Shiraiwa site in Kikugawa City, Shizuoka Prefecture confirms that the niddy-noddy has been used since the Yayoi period in textile production to make *kase* (紵), skeins, and for warping. It is useful to count the length of the threads required to weave. Interestingly, the pronunciation of the name of the tool and the result of its use are the same, though the Chinese characters used to write them differ. The example shown in fig. 10 is carefully formed and assembled. The estimated date is about the 2nd century AD. An oracle bone and rice husks were also found at the same site.⁵³

This kind of tool has been used in a wide area in East Asia since ancient times (Warring States period Jiangxi, China),⁵⁴ though the size, the structure and material are different depending on the function.

The following are wooden artifacts (presumed to be textile tools) excavated from the Yōkaichijikata

46. Fukuoka City Board of Education (Sasai Iseki 3) 1995.

47. Higashimura 2008, 1-21; Okamura 1977, 210-211.

48. Nunome 1995, (Sasai Iseki 3) 133-135.

49. Fukuoka City Board of Education (Sasai Iseki 3) 1995, 50. 56.

50. Barber 1991, 80-81.

51. Kanagawa Archaeology Foundation 1999, PL.4; Higashimura 2008, 14-15.

52. Fransis 1990.

53. Sakakibara & Ishikawa 1975.

54. 纺织卷 (A History of Science and Technology in China/ vol. of the textile technology) 2002, 157-158.

a)

b)

Fig. 8. Textile tools from the Sasai site; a) A pair of warp bars; b) Clay whorls owned by the Fukuoka Municipal Center for Excavated Cultural Properties. Courtesy of the Fukuoka City Board of Education (1995, 50 and 53).

site (Fig.11 Important Cultural Properties),⁵⁵ Ishikawa Prefecture and Rokudai A site (Fig.12),⁵⁶ Mie Prefecture. The textile tools found at Yōkaichijikata site include spindle whorls, parts of the niddy-noddy, a back strap, a beater, and a pair of flat bars to hold the warp.

Wood species were identified as plum-yew for a part of a rotating device and as Japanese mulberry for five objects including the weft beaters and pairs of the flat warp clip bars, though it is popular to use hard wood like evergreen oak in other regions.

55. Komatsu-shi Maizō Bunkazai Center 2013, 144-146.

56. Mie-ken Maizō Bunkazai Center 2000, 158-161.

Fig. 9. A wooden flat board from the Ikego site, Zushi City, Kanagawa Prefecture. Courtesy of the Kanagawa Archaeology Foundation (1999, Pl. 4).

The Rokudai A site finds also include spindles whorls, parts of a niddy-noddy, a back strap, a beater, parts of the frame spool (*waku*), and parts of wooden rotating devices which turn horizontally. We suppose these might be what is called *kurubeki*, though it is labeled *mai-no-ha* in *Wakan Sansai Zue* written in the 18th century (Figs. 6a and 6b). A similar type is also found in ritual clay remains from the Myōgajima Kofun burial mound no. 5 (Figs. 6c and 6d). In China this type of reel is mentioned as being used in the southern area for cotton production.⁵⁷ Horizontal swivels turn more slowly than vertical ones. Without this kind of tool the threads stored in skeins cannot be used to set up the warp. The species of wood used for these tools were identified as mainly soft woods such as Japanese cedar *sugi* and Japanese cypress *hinoki*.

The term *kase* is found in the *Engishiki* as *kasehi* and in the *Man'yōshū* as *kase* though it is not found in the *Wamyō Ruijūshō*. The function of the niddy-noddy is to make skeins or for warping. This tool is still in use in some regions in Japan and the neighboring countries. In Miyakojima Island, Okinawa Prefecture, they

use *kashigi* for making *chomafu* (*karamushi* cloth).⁵⁸ In Kōzuhara, Shiga Prefecture they use *kase* for hemp cloth production.⁵⁹ The technique dates back to at least the Yayoi period when the rice cultivation, bronze casting, and iron smelting spread in Japan.

For example, we can find several scenes on cast bronze bells called *dōtaku*, dated to about the 1st century AD, Yayoi period. These bells are often found with protrusions along their sides, suggesting they were for ritual use. One such bell depicts a person holding a niddy-noddy-like tool in his/her hands, though this is not definitively identified as a textile tool (Fig. 13). Some say that it might be a kind of fishing tool, as fish are depicted nearby the person. These bells are often found alongside weapons and are thought to be ritual items.

From the Sakuragaoka site in Hyōgo Prefecture, a series of the cast bronze ritual items were excavated. On two bronze bells, No. 4 and No. 5, people with I-shaped tools are depicted.

During the Kofun period (3rd to 6th centuries AD), which follows after the Yayoi period, weaving techniques developed along with the evolution of the social structure. Towards the end of the Kofun period, movements began to establish a nation state, many aspects being adopted from China and Korea: the administrative system, ceremonial appearance and manners, etc. They also built their capital according to the Chinese model. In order to carry out all these projects, they needed developed techniques, which of course included the textile technologies.

In the Japanese chronicle *Nihon Shoki*,⁶⁰ the entry about the era of the legendary Emperor Ōjin mentions the invitation of four specialists from Wu (Jp. *Kure*), one of the Three Kingdoms in the southern area of China. Indeed, the *hata-ori* weavers clan is sometimes called *kure-hatori* (garment and dress makers from Wu). In addition, the name *ana-hatori* (pit loom weavers),⁶¹ another of the four specialists, is well worth consideration in the context of the textile terminology in the Orient.

57. 中国科学技术史 纺织卷 (A History of Science and Technology in China/ vol. of the textile technology) 2002, 183-184.

58. Nagano & Hiroi 1999, 57.

59. Nagano & Hiroi 1999, 39.

60. Kojima *et al.* 1994.

61. In a similar story found in a different part of the Chronicle, the name '*aya-hatori*' (Han-style weaver) is found instead of '*ana-hatori*'.

Fig. 10. A wooden kase from the Shiraiwa site. Height: 79.8 cm, width: 33.5 cm / 32.5 cm. Courtesy of the Kikugawa City Board of Education, Shizuoka Prefecture.

Conclusion and discussion

A discussion of textile terminology in ancient Japan spans a wide geographical and chronological range, being influenced not only by its neighbors Korea and China, but also through them by the Eurasian Continent.⁶² The Neolithic Jōmon culture, which lasted for about 10,000 years, produced excellent basketry from the very beginning, and over time pottery with cord impressions came to flourish. During the succeeding Yayoi period, many innovative textile technologies were brought to Japan, leading to the development of weaving, which spread through specialists to many parts of the area.

The terms related to textile production found in ancient records about Japan are mostly related, on the one hand, to bast fibers taken from hemp and ramie and, on the other hand, to silk production along with sericulture. The bast fiber production dates further back than the silk production. The importance laid on bast fiber production reflects the natural vegetation of Japan, but also mimics a similar situation in China, as documented in the *Wei Zhi* section of the Chinese chronicle *Sanguo Zhi* (Records of the Three Kingdoms, AD 220-265).

During the Jōmon period items made with bast fibers used the plant fibers without joining them into longer threads. Exactly when splicing to form continuous threads began is as yet unverified, but it is likely to date back to the Yayoi period. This needs further cooperative investigation.

The knowledge of sericulture and the art of weaving silk are thought to have been introduced from China and indeed many of the Chinese characters used to denote the related terms are the same in both languages, though they are read with different pronunciation.

Among all the early textile terms, the *kurubeki* (swivel) seems particularly important for considering the historical and technical contexts of textile terminologies within the wide area of the Eurasian Continent. The term *kurubeki* is derived from the word *kuru* (to wind, reel, spin), which in turn is related to rotating devices. Significantly, *kurubeki* has phonetic similarities to words for ‘wheel’ (**k^wék^wlo* ; Jp: *kuruma*).⁶³ One might say silk reeling techniques in China were highly developed with the help of the ‘wheel’, which would have been brought with chariots from the West in the 2nd millennium BC. Without these, they could never have manipulated the fine and long silk filaments so efficiently.

62. 林 梅村 Lin Meicun 2005, 228-262. He discusses a similar process for the origin and development of bronze sword production in the Eurasian Continent.

63. Mallory & Adams 1997, 640-641; Mallory & Mair 2000, 326.

Fig. 11. Wooden textile tools from the Yōkaichijikata site (Important Cultural Properties/ mid. Yayoi period). Courtesy of the Komatsu City Board of Education, Ishikawa Prefecture (2014, 146).

第30図 紡錘車・杵(381~407)

Fig. 12. Wooden textile tools from the Rokudai A site. Courtesy of the Mie Prefectural Center for Excavated Cultural Properties; a) Wooden whorls (nos. 381-383) and parts of niddy-noddies (nos. 384-407) The Mie Prefectural Center for Excavated Cultural Properties (2000, 158);

第31図 杵・繰かけ・糸枠(408~426)

Fig. 12. b) Parts of niddy-noddies (nos. 417-419), rotating devices (nos. 408-416), and frame spools (nos. 420-426). The Mie Prefectural Center for Excavated Cultural Properties (2000, 159);

第32図 タタリ(427~433)

Fig. 12. c) Stands of the skein holders and/or fiber stands (nos. 427-433). The Mie Prefectural Center for Excavated Cultural Properties (2000, 160);

第33図 織機(434~447)

Fig. 12. d) Parts of looms (nos. 434-447). The Mie Prefectural Center for Excavated Cultural Properties (2000, 161).

Fig. 13. a) & b) Full view and a figure with a niddy-noddy-like tool on Kamika bronze ritual bell no.5 (height: 39.4 cm) from the Sakuragaoka site (National Treasure), Courtesy of the Kobe City Museum.

Although we cannot know the exact time when the specialists brought textile related techniques into Japan, it was probably during the Yayoi period. This probably occurred in conjunction with the importation of other rotating devices. According to the research on wooden vessel processing, it was also during the Yayoi period that rotating devices, like the lathe (Jp: *rokuro*) appeared.⁶⁴ The lathe, like the wheel, is said to have originated in the West Asia, and the word *rokuro* also has a phonetic resemblance to other terms from that area.

Parts of wooden rotating devices found in Rokudai A site, Mie Prefecture, which date back to between the 4th to 9th centuries AD, give evidence to the Japanese having such rotating devices by then, though, unfortunately, we cannot be sure what they were called during that period.

It may be that in the Yayoi period, native terms for the tools and techniques had come into common use before the Chinese terms (developed during the Han dynasty) arrived. For instance, the Chinese word *che*, meaning car, is read *kuruma* in Japanese. This reading does not follow the modern Chinese pronunciation, but has been treated as a Japanese term (*wa-go*), since at least the Nara period. At the same time it has a phonetic resemblance to proto-Indo-European words of the same meaning.⁶⁵ Other Japanese words related to wheels use the same *kuru* as a base, such as *kurukuru* or *guruguru* (adverbs for *mawaru*, *mawasu* or *korogaru*, *korogasu*: to rotate or twirl) and *kurubushi* (ankle). Clearly terms related to wheels provide clues to understanding the cultural interconnections across Asia and invite further linguistic examination.⁶⁶

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64. Kuraku 1989, 98-99.

65. Mallory & Mair 2000, 326. "The old Chinese word for chariot, the modern Mandarin *ch'e*, would have been pronounced roughly as **kʰʌg* during the Shang dynasty, and this word bears a certain resemblance to one of the Proto-Indo-European words for 'wheel' (**kʷékʷlo*) which provided the base for the word for vehicle in Tocharian, i.e., Tocharian A *kukāl* and Tocharian B *kukare*." Rather than a direct borrowing from the Tocharian, however, linguists suggests that all the terms for wheels go back to a proto word from an early Iranian language.

66. Among the previous linguistic studies on resemblance of the terminology of not only textiles but also of religion, rice cultivation, etc. between the Old Japanese, Korean and proto-Dravidian was carried out by Susumu Ohno. For example the term for the loom and cloths (*hata* or *fata*) is supposed to relate '*patam*', Dravidian, from '*pata*', Sanskrit.

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