

Investigation Report on the *Shōgozō* Sutra Repository in the Shosoin

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The *Shōgozō* Sutra Repository in the Shosoin was originally a storehouse of *Sonshōin*, a sub-temple established within the precincts of Todaiji Temple. The *Shōgozō* was relocated to the precincts of the Shosoin around 1896 when the contained sutra scrolls were donated to the Imperial Family. This paper is a report of a special investigation on the structure of the *Shōgozō* organized by the Office of the Shosoin Treasure House in 2020. This first detailed study on the repository involving the full-scale measurements has largely clarified its construction history, architectural style, techniques, characteristics, and state of preservation. Although no record exists regarding the date of its establishment, considering the construction techniques, standards, wood allocation, and the result of tree-ring dating, the sutra repository is likely to have been built in the mid-13th century. This is slightly later than the restoration of *Sonshōin* (1190–1200) by *Bengyo* 弁暁, the 13th head priest, after a fire due to war in 1181. This repository also follows the *azekura-zukuri* 校倉造り, an ancient architectural style, except the *daiwa* 台輪 architrave that has no rat guards and extends outside the wooden wall to support the end of the *azeki* 校木 wooden beams. Furthermore, the building presumably reflects a strong influence of the skills and techniques of the *Shoso*, Shosoin Repository including the three-tiered long woods on top of the *azeki* wooden beams as well as the dragging beams that support the eaves. On the other hand, the *azeki* wooden beams display transformation in appearance appropriate for the time such as being comparatively thinner than those of similar-sized ancient *azekura* buildings, and that the cross-section of the beams has a predilection to be more oblong. The *Shōgozō* Repository was presumably constructed entirely of *hinoki* cypress wood. Its interior walls are elaborately finished by a *yari-ganna* 槍鉋, spear plane after assembly. The sutra shelves built inside are also sophisticatedly crafted. Originally, the repository had a narrow wooden deck at the front possibly to meet the frequent use of the contained articles. This tells the prosperous period of the repository as a base for education and learning of the *Kegon* sect. Later, security was strengthened by removing the front deck and installing another “*saya-tobira* 鞘扉”, lattice door to outside the entrance. Despite the partial repairs and alterations around the door, the original appearance of the building including the inner shelves has been well retained, and the state of preservation condition is extremely good.

Tree-ring Dating List of the *Shōgozō* Sutra Repository in the Shosoin

Yasuharu Hoshino

This paper reports the result of a dendrochronological investigation on the *Shōgozō* Sutra Repository in the Shosoin, focusing on its construction components as well as the boards of the sutra shelves built inside the repository. The analysis was implemented, as a part of a special investigation on the structure of the *Shōgozō* conducted in 2020. Among the timbers targeted by the investigation, the tree-ring dates of 55 samples were identified. Based on the results of those determined to retain sapwood, it is likely that the timbers for the structure were cut shortly after 1235, and so was the shelf boards shortly after 1126. This indicates that the repository is constructed of timbers cut in the thirteenth century, and this timescale is consistent with the hypothesis of the structural investigation team that the *Shōgozō* is considered to be a medieval building built sometime after the fire due to war in 1181. On the other hand, the shelves are constructed of timbers cut in the twelfth century, and it becomes apparent that there is around 100-year gap between the felling of the construction materials of the building and that of shelf boards.

Storage Situations of Sutras, Ritual Books and Documents at Medieval Sutra Repositories

Keisuke Fujii

As a part of a special investigation on the structure of the *Shōgozō* Sutra Repository, this study aims to clarify how written sacred manuscripts and documents were stored at medieval sutra repositories. A set of shelves installed in the *Shōgozō* is estimated to be the original and have been prepared at the time of construction of the repository. These shelves are extremely valuable, because in other ancient/medieval sutra repositories, the original shelves tend to have been replaced in a later period. The shelves of the *Shōgozō* adopted a storage system in which sutras were stored in sutra boxes of approximately 10cm depth and stacked on the shelves. Sutra chests were likely to be placed on the floor beneath the shelves. Consulting the storage method of the *Shōgozō*, the author investigated the other medieval sutra repositories. At the *Kasuga Taisha* Shrine, the *Issaikyo* sutras donated by the Cloistered Emperor Shirakawa in 1100 were stored in 85 sutra chests, and kept in the Issaikyo Sutra Repository. The chests were stacked in two layers and placed beneath the sutra shelves. A sutra repository of the *Daigo-ji* Temple (constructed at the end of the twelfth century; destroyed by fire in 1939) was built to store Issaikyo sutras of the Song dynasty edition donated by Priest *Shunjōbō Chōgen* 俊乗房 重源. The repository was designed to accommodate 640 sutra boxes at maximum. In a sutra repository of the *Hannya-ji* Temple, the sutra shelves furnished during the medieval time were restored in 1970s, and their Yuan dynasty edition Issaikyo sutras were stored in sutra boxes and placed on the restored shelves. A common point among the *Shōgozō*, Issaikyo Sutra Repository of Kasuga Taisha Shrine and the sutra repository of Hannya-ji Temple is that the shelves were installed along the walls. This layout of sutra shelves within the repository may have been the standard in the medieval Nara. Furthermore, it is most likely that the number of sutra kept in chests was rather few, but the majority was generally stored in sutra boxes.

Study on the Original Construction of Urushi-Lacquered Hexagonal *Zushi* Shrine in the Shosoin

Satoshi Ono

This paper aims to interpret and present the original appearance of an urushi-lacquered hexagonal *zushi* miniature shrine from the Nara Period, preserved in the Shosoin. This wooden *zushi* no longer retains its original three-dimensional form but broke completely into parts. The research examined a group of existing components, including doors (South Section 160); roof shingles and beams (Middle Section 204); and pillars, *uchinori-nageshi* 内法長押 non-penetrating interior horizontal beams, *daiwa* 台輪 architraves, angle rafters and others (Middle Section 202). Ancient *zushi* can, based on the style of the existing representative examples, be categorized into four types as follows: (i) *Tamamushi no Zushi* shrine, *Horyu-ji* Temple (a type originated from Buddha halls); (ii) *Nishi waki-zushi*, *Dempodo* Hall, *Horyu-ji* Temple (a type developed from a sleeping space covered by the roof and *tobari* 帳 hangings); (iii) the *zushi* in the Mandala Pavilion, *Taima-dera* Temple (a style eclectically combining the canopy and *tobari* hangings used by nobility); and (iv) *Sekishitsu-Bunkanboku no On-zushi*, lacquered red zelkova cabinet in the Shosoin. The urushi-lacquered hexagonal *zushi* is invaluable as a surviving example of type (iii). In this investigation, firstly, the author examined all the pieces in order to sort out the original components and exclude those unrelated ones. Subsequently, the detailed form was verified, based on the shape of each component and the trace of joints with other pieces. As a result, the plane dimensions, total length of the pillars, cross-sectional dimensions of the framework, and the convex curve of the eaves and roof of the *zushi* were successfully understood, and the original construction was fully illustrated. Nevertheless, nothing is known regarding the foundation due to the absence of the related materials. Comparing the illustrated Shosoin hexagonal *zushi* and the Mandala pavilion, *Taima-dera* Temple, the author clarified their similarities, such as the broaden shape of the pillar tops and the style of the roofs.

Molecular Weight of Shosoin Silk Textiles

Rikiya Nakamura

The Shosoin holds a great number of textile artifacts such as robes, garments, furnishings, and Buddhist altar fittings. Among these, those objects made of silk are particularly in a fragile state, posing many challenges for their long-term preservation. This study reports the results of measuring the molecular weight of silk protein of Shosoin textiles, in order to understand their current condition. The author applied the size exclusion chromatography for this study, and evaluated the degree of silk deterioration. After analyzing 52 silk samples from the Shosoin textiles, it was found that their molecular weights fall between 9,000 and 20,000. This is less than 1/10 of that of modern silk, showing the evidence of degrading into smaller molecules due to their aging. In order to investigate the effect of dyes upon silk degradation, the study also looked into the molecular weight of those silk textiles identified as dyed with madder, eulalia, dyer's knotweed or gromwell, in comparison with undyed ones. As a result, their molecular weights were almost the same regardless of dye type, and between dyed and undyed samples. The author also examined the degree of silk deterioration depending on the regions of production, and no difference was found in their molecular weights. Consequently, it was concluded that the deterioration of silk has been largely caused by the long-term storage condition rather than by the type of dye used or their origins. The study scientifically confirms that the Shosoin silk textiles are in degraded states, and require periodical condition-monitoring and continuous preservation actions.

A Study on the “*Hitachi* Province Household Register”

Takuya Mitsuno

The “*Hitachi* Province Household Register” 常陸国戸籍 is an official document of the Heian Period, preserved in the Shosoin. Currently, there remain six sheets and 29 small fragments, compiled as *Jinkai Monjyo* 塵芥文書, No. 32. The object had suffered outstanding fragmentation, particularly from the fourth sheet onward; and was repaired during the Meiji period without fully considering the original alignments of these fragments. This study aims to reconstruct the sequence of these fragments, and to revise the formerly transcribed texts. The author also examined the characteristics of this register as historical record. The object had been kept as scroll and subjected to wet damage, resulting in having losses and staining at certain intervals. In addition, some of the characters written in *sumi* ink had been blurred and transferred to different locations in contact. Through the investigation, the author obtained new information about the ink transfer, partly thanks to improvements in the performance of infrared cameras. Based on the shape of losses, staining and ink transfer, the original positions of the fragments were determined. Furthermore, randomly stamped seals of Hitachi Repository can be seen on the front surface. This paper demonstrates the stamped positions of the seal as well as the presumed seal impression. One of the characteristics of this document is that names of the deceased were listed. By reconstructing the original alignment of the fragments, the incomprehension of the previously transcribed texts about the deceased has been corrected. This leads to a conclusion that the names of the deceased were added after the seal was stamped. Furthermore, in comparison with the “*Inaba* Province Household Register” 因幡国戸籍⁽¹⁾ stamped with the Inaba Repository seal, it is assumed that the Hitachi one is a draft for the *Keicho-rekimyo* 計帳歴名, prepared annually to show the details of family members per household.

(1) Akihiro Watanabe. 2017. Formation and Succession of the “*Inaba* Province Household Register”. *Bulletin of Office of the Shosoin Treasure House*, 39.