RECENT RESEARCH ACTIVITIES

Wood species identification of ancient Japanese deity sculptures by conventional methods and synchrotron X-ray microtomography

(Laboratory of Biomass Morphogenesis and Information, RISH, Kyoto University)

Suyako Tazuru-Mizuno

In the history of Japanese sculpture, studying the image of Japanese deity sculptures is a neglected field. This is due to the small number of wooden deities remaining. In addition, since many deity images have been enshrined behind closed doors as they are considered as gods, there are fewer opportunities to investigate them in comparison to Buddhist images. Moreover, several historical facts have made it difficult to study deities, such as the god and Buddha separation and the fact that deities have a different structural progress historically compared to Buddhist images. Due to these underlying causes, a systematic approach for investigating wooden deities lags behind studies of other sculpture types. Until now, most studies have only focused on structural survey, historical consideration, and art history. Clarifying the concept of wood selection for deity sculptures would be key to solving the underlying problems in deity studies. How and why these deity sculptures came to be made with certain wood species are important issues for solving the relevance of deity sculptures and Buddhist images. Recently we shed new light on the syncretization of Shinto with Buddhism from the aspect of wood species selection. The fragments fallen and collected from deity sculptures were extremely small and their poor condition was caused by severe degradation. They were too brittle to be sectioned without embedding in resin. Therefore, together with conventional microscopic methods, synchrotron X-ray microtomography was applied.

For this method, the experimental setup of BL20XU at SPring-8 (The world's largest third-generation synchrotron radiation facility) allowed us to image any wood sample at a spatial resolution of 0.5 μm. The result showed that *Torreya nucifera* and *Chamaecyparis obtusa* were predominantly used for making deity sculptures in Shiga prefecture, Japan. In later years, most of the Buddhist images made during the Nara to Heian periods were made of *Torreya nucifera* by several researchers[1]. Our results lead to our presumption that deity sculptures were also made by sculptors of Buddhist images at that time. Continued investigation of deity sculptures in regard to wood species has potential to reveal the linkage between Buddhism and Shinto around Heian period in Japan.

References

[1] Kaneko H, Iwasa M, Noshiro S, Fujii T (2010) Wood types and material selection for Japanese wooden statues of the ancient period, III: Further thoughts on 8th and 9th century sculptures, MUSEUM The Bimonthly Magazine of the Tokyo National Museum, No.625, 61-78（in Japanese with English summary)