Technical Culture in Kaga and Regional Rangaku

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This paper introduces examples of "technical culture" in the Hokuriku region, and is a general investigation into mainly the Kaga feudal domain in order to confirm the effect of the relationship between regional society and Rangaku knowledge.

During the latter part of the Edo era the accumulation of various systems, research, interaction, and the manufacture of tools and products related to "science and technology", or "technical culture", took place while transcending sectors and regions. For instance, in the Kaga feudal domain there was a group of scientists in Kanazawa comprised of Nishimura Tachu of Etchu-Johana, a star pupil of the Osakan Asada Goryu, Endo Takanori, who was influenced by Honda Toshiaki from Edo, and Kono Kyutarō who were deeply involved in the introduction of a high standard of knowledge on astronomy such as amending the hour system and the observation of comets. The activities of Endo and his colleagues included using a highly precise pendulum clock to establish their own hour system divided into 13 segments a day, and in so doing they introduced findings of astronomy (fixed time method) and physics and chemistry based on Rangaku knowledge. Related to these activities was sophisticated science and technology such as the box telescope devised by an ophthalmologist Matsuda Toei, a pupil of the Rangaku scholar Sugita Seikei. When Endo and other retainers devised a detailed map of the castle town of Kanazawa, "Kanazawa Bunkên Ezu" ("Survey Map of Kanazawa"), they used the surveying techniques of Ishiguro Nobuyoshi, a scholar of ancient Japanese mathematics from Etchu-Fushiki, to carry out accurate measurements. The name of the Rangaku physician Kurokawa Masayasu appears at this time as the translator of documents that accompanied astronomical measuring instruments devised by Endo.

It is against this backdrop that the case of the precision machinery maker Ono Benkichi has a special significance among the instances found in this region. Benkichi was no more than an unknown craftsman, but his curiosity about technology that sprang from his work led him to become one of the central figures in the technical culture of the Kaga feudal domain at the end of the Edo Era. One might say that the commitment to regional Rangaku by craftsmen such as Benkichi and, conversely, the development of Rangaku in Kaga spurred on by the techniques of these craftsmen, is one of the features unique to this region.

In this way, as illustrated by the fine examples of astronomy and surveying and work on amending the time system, the "technical culture" in Kaga was a unique achievement for this region while maintaining a considerably high standard. Also, it was the mutually complementary relationship between practical scientists
(technicians) and Rangaku scholars (regional Rangaku) that sustained this "technical culture" of the Kaga feudal domain.

Aspects while looking at the encouragement given to samurai, retainers and their families during the process of the widespread adoption of vaccinations, the establishment and implementation of vaccination methods in each county, and an approval of vaccinations that exceeded beyond the geographical bounds of the domain's territory.