

Title of dissertation			
Study on production of ironware in Mongolian nomadic dynasties			
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The purpose of this paper is to explain the background behind the establishment of the powerful kingships (In this paper, we will refer to them as the Nomadic Empires of Mongolia) of the Xiongnu, Tujue, and Mongols in the Mongolian plateau under the extreme cold and dry environments. Instead of placing the focus on difficult-to-evidentiate argumentation of the superiority of horse-riding and their skillful tactics, an empirical analysis was carried out by turning the attention to the iron resources, which were raw material for the weapons and harnesses that supported military power.

The results show that the establishment of Nomadic Empires of Mongolia was largely related to the outcome of procurement of iron resource and technological innovation in ironware production.

In Chapter 1, I examined previous studies on iron in the history of Mongolia. Traditionally, when compared with neighboring areas, the Mongolian plateau was considered to have been poor in iron resources and technology deficient, and it was believed that one of the purposes of the Nomadic Empires of Mongolia's foreign expedition was plunder iron. However, according to the recent archaeological research on the Mongolian plateau, considering that many ironwork artifacts were uncovered, and I argued that we should change our preconceptions about the relationship between Mongolian nomads' and iron.

In Chapter 2, in order to understand the ironware production system of the Mongolian plateau, it was made in comparison with data were taken from China, being known as an advanced iron-producing region, and those from Southern Siberia, which has long been the center of iron production in Inner Asia. The results show that ironware production in the Mongolian plateau can be traced back to Southern Siberia rather than to China when looking at the type of iron blast furnaces used and its technology, and wrought iron was used instead of cast iron.

In Chapter 3, I looked into the ironware production in the Mongolia plateau from the 4th century BC, during which ironware first appeared, to the Xiongnu period (3rd century BC to 1st century AD), when ironware was in full use. The first sources of iron in the Mongolian plateau were found in Central Asia, and in the Xiongnu period, ironware production was carried out in various parts of the Mongolian plateau using iron-making techniques that had their origins from Southern Siberia.

In Chapter 4, records on ironware production in the Xianbei (2nd-4th century), Rouran (402-552), Tujue (552-744), Uyghur (744-840) and Qidan (916-1125) dynasties are examined. As a result, it was

found that iron-foundry plants were concentrated in the Altai region in the western part of the Mongolian plateau from the Xianbei period, and progressively the furnaces increase in size and the use count per furnace, making mass production possible during the Tujue-Uyghur period. During the Qidan period, however, manufacturing of iron in the Altai region was abolished, and iron production in the entire Mongolian plateau also ceased to exist.

In Chapter 5, I conducted a research on ironware production in the Mongolian plateau during the Mongol Empire (1206-1388). I was able to reconfirm the validity of previous studies that the ironware production specialized in forging, with cast iron bar ingots procured from Jin Dynasty and Western Xia. On top of that, based on the characteristics of the forging furnaces, it was made clear that two groups of technical experts, one of Siberian origin and the other of Chinese origin (Western Xia) existed.

In Chapter 6, based on the results above, the relationship between ironware production and the rise and fall of the Nomadic Empires of Mongolia is examined. Under the Xiongnu empire, other than the ruler Chanyu, the leaders of local groups had also employed a group of ironworkers, enabling self-sufficiency in ironware production, thus giving them military advantage against the Han. But on the other hand, that also encouraged the subjugated tribe to gain independence, which led to their collapse. It is assumed after the Xianbei period, the efficiency and mass production process of iron improved in the Altai region, and these iron materials were later supplied to the entire Mongolian plateau.

I believe that this promoted the independent growth of the tribes in the Altai area and led to the rise of Tujue. This mode of production was also followed by the Uyghur, however iron production in Mongolian plateau ceased when it came under the rule of Qidan. The cause of this can be found under the rule of Qidan and embargo on the export of iron. In this paper, I have shown that the Mongols did not carry out its own production of iron, but instead used cast iron scrap as a raw material for forging to produce ironware. Through the analysis of iron materials and forging furnaces, I have empirically demonstrated the theory that the Mongol Empire increased its military strength by efficiently producing weapons through the introduction of standardized iron materials can be confirmed.

Based on the results of this study, I concluded that the success of securing iron resources and technological innovation in ironware production played a significant role to the rise of Nomadic Empires of Mongolia.

Photos



Research presentation at Ehime University
(2018/12/20)



Examination of materials at Kyushu University
(2018/12/25)