Provenance Studies on Japanese and Korean Bronze Objects by Lead Isotope Analysis

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The results of estimating the locations of origin of the raw materials of bronze resources excavated in Japan and Korea based on their lead isotope ratio are summarized. New data of Korean lead minerals published by researchers at Korean research institutes have dramatically increased the likelihood of success in estimating the locations of origin of the raw materials of resources excavated at Japanese tumuli, which had been problematic. Another find was that in some cases, resources excavated in Korea had been inferred to have raw materials originating in China, not only in the Korean Peninsula.

A study of the dotaku (ceremonial bronze bells) excavated at the Kamo-Iwakura archeological site in Shimane Prefecture clearly indicated the timing of when the origin of raw materials change, according to the type of dotaku. Further, by comparing the body of the dotaku with its mended parts, it was discovered that, in some cases, the same raw materials were used while in other cases, raw materials of a different origin were added during mending.

Display methods which had been used (figure format A and figure format B) show that the data of Korean lead minerals has regions overlapping with the distribution for Chinese and Japanese lead minerals, and there is a need to find an effective display method which would succeed in distinguishing them. However, it must be kept in mind that those samples are only from mines which facilitate sampling today. Estimating the location of origin of the raw materials for excavated bronze resources would still require verifying factors such as whether the mine was active at the time and whether there was a link between the location the raw material was mined and the location the resource was fabricated. It cannot be speculated simply by comparing archeological resources with the numerical values. Further investigation into remains of mines and smelting facilities in Korea is anticipated.

Key words: Korea, lead isotope ratios, Korean lead minerals, bronzes, dotaku, bronze bells, bronze swords, cylindrical bronze objects, horse-shaped buckles