

# Estimation of the Provenance of Lead Contained in Bronze Objects by Lead Isotope Analysis

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The lead isotope analysis used in Japanese archaeological studies today is still based on the "original theory", that is, the framework that the lead in early Yayoi bronzes was from the Korean peninsula, that in the Western Han mirrors and late Yayoi bronzes from northern China, and the lead used for Kofun period bronzes from southern China. But since the idea was presented more than ten years ago analyzed bronze examples have largely increased and the study in China have made a remarkable progress, producing results that do not correspond to that framework.

In view of this situation, it seems very important to re-evaluate all the results of analyses of bronzes by lead isotope analysis done in the past. The author, referring to the results of analyses in China, considers mainly problem of the provenances of lead as follows.

(1) It is assumable that in ancient China from Xia/Shang to Han dynasty both Yunnan type lead (Sanxingdui type), which is very peculiar, and Hebei-Liaoning type lead were used. (2) Lead contained in early Yayoi bronzes does not match with that found in the Korean peninsula but its relative isotopic abundance corresponds to that of the ancient Chinese lead. (3) According to the "original theory" lead in the Western Han mirrors and late Yayoi bronzes are from Shanxi province and other places in northern China, but it is more likely to be from northeastern China. (4) Lead in Kofun period bronzes are considered to be from southern China, but besides that probably there were other sources including Hebei and Liaoning provinces.

The author also discusses problems of lead produced in Japan, bronze swords from Izumo Kōjindani site, and lead spearhead from Kyushu.

(Translation by KŌNO Tetsurō)