Interdisciplinary Research

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Much of today's archaeological research is interdisciplinary research. Cooperation with engineering fields is active in research and utilization in handling three-dimensional data by ground penetrating radar (GPR), electrical resistivity tomography (ERT), infrared laser, or photogrammetry (SfM-MVS *et al.*). The ratio of interdisciplinary research in academic presentations is increasing.

Discussion of environmental change is active in environmental archaeology based on oxygen isotope dendrochronology, tephra, pollen, and location. Especially discussed is the relationship between factors of transitional period and transformation to farming society, and environmental change in the Jomon period.

Anthropology has achieved the most results in recent years due to DNA analysis. Especially formation processes and structures of the Japanese people are examined from both modern Japanese and excavated human bones. Also, micro migration of people is discussed based on dental crown analysis and Sr-isotope analysis of teeth.

Discussed in archaeobotany are cultivation of pulses, selective use of Quercus gilva, dating of cultivated plants, and varieties of spelt wheat in the Jomon period. As for SEM replica method, discussed are spatial deviation of detected seeds and change in detection rates. Furthermore, intentional mixing is assumed for pulses and maize weevils in Jomon pottery and rice husks in Yayoi pottery. Starch granule analysis is applied not only to lithics but also wooden artifacts and soil. Isotope analysis and lipid analysis are used to interpret differences in groups and their changes, other than farming theories and usage of artifacts. In addition to revealing emergence factors of pottery and differences in location, it became clear that there was a population in the Chubu region that consumed large volumes of cereals in Final Jomon. Other than the above, progress is seen in unraveling inner structures of lacquer ware by three-dimensional analysis and reconstruction of the manufacturing process, and material identification of textile and braided products.

Discussed for zooarchaeology are capturing ranges for fish species and processing and trading of mammals, mainly deer. Horse raising and rituals are inferred for the medieval and later.

As for material analysis, discussions are held for assumption of origin, distribution, and utilization for stone, clay, metal, and pigment by fluorescent X-rays, EPMA, and X-ray

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analysis microscope.

Thus, various natural scientific analysis is conducted regardless of periods and regions. Specially noted is that it is not only a display of mere analytical results, but also discussion on social theory and reconstruction of human activities such as migration and trade, based on development of new methods and diversified data.