

## INTRODUCTION

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As one of the programs at Meiji University's Center for Obsidian and Lithic Studies in 2012, we organized an International Symposium entitled "Lithic raw material exploitation and circulation in prehistory: a comparative perspective in diverse palaeoenvironments", which was held October 27 - 28 of that year at Meiji University in Tokyo. This symposium was also supported by the International Union for Quaternary Research (INQUA) (project no.: 1207; title: "Palaeoenvironment and lithic raw material exploitation in North and East Asia during MIS3 and MIS2"; project leader: A. Ono). All articles in this volume have originated from contributions to this symposium.

Lithic raw material provenance studies have a long tradition in both Europe and East Asia. Specifically, the scope of obsidian provenance studies has greatly expanded in the past two decades in Japan and neighboring regions, such as the Russian Far East and the Korean Peninsula. Archaeological interpretations of lithic raw material procurement systems and distribution patterns or transportation systems have also developed in various areas, and there have been many case studies on different lithic raw materials. The symposium aimed to discuss these topics with particular reference to the comparative perspective between Europe and East Asia. Through the symposium, we shared various geochemical analyses and archaeological studies on lithic raw materials other than obsidian in Europe, but the differences in the development of palaeoenvironmental research backgrounds was also made clear. We clarified further necessary points for future collaboration in lithic raw material research irrespective of geology or the archaeology.

Papers cited in this volume focus on various aspects of lithic raw material procurement and circulation from Europe to the Far East, mostly in the Upper Palaeolithic. H. Floss emphasizes rivers as one of the powerful means of human migration and cultural transmission in the Upper Palaeolithic in Central Europe, with a lot of evidence of lithic artifacts, personal ornaments, and mobile and parietal arts. D. Schäfer and S. Bertola discuss various local and non-local lithic raw materials, centering on their excavations at Ullafelsen, an early Mesolithic site in the Stubai Alps, Tyrol. They elucidate that the high mountainous area did not serve as a barrier to human exchange networks, but rather served as a positive contact zone for material transportation. V. Stepanchuk introduces lithic raw material exploitation in Ukraine, and discusses the significance of the Mira site case on remote raw material exploitation in the Dnieper River.

T. Carter, K. T. Biro, S. Ryzhov, V. Stepanchuk, H. Sato, Y. Yakushige, K. Shimada and K. Shiba focus on obsidian. T. Carter discusses the interpretative potential of obsidian characterization studies in relation to a more holistic behavioral concept of an "operational chain." K. T. Biro gives a synthetic summarization of Carpathian obsidian studies, both of archaeological and physicochemical non-destructive analyses. S. Ryzhov describes his own excavated key site, Malyj Rakovets, which has seven well-stratified cultural horizons including Lower, Middle and Upper Palaeolithic industries bearing obsidian. V. Stepanchuk discusses a unique case of the Mira site, located a valley of the river Dnieper, concerning the characteristic features of the EUP layer I, and the authentic UP features Layer IIa. The Layer I indicates repetitive dense occupation with almost 60,000 lithic artifacts compare to the Layer IIa with only about 200 knapped flints. Issues of coexistence of Middle and various kinds of Upper Palaeolithic cultures in Eastern Europe were also discussed. H. Sato and M. Yakushige introduce the results of archaeological analyses of the Upper Palaeolithic in the northernmost of the

Japanese Islands, Hokkaido. Their extensive analysis reveals that eight obsidian sources were used in the Upper Palaeolithic, and these results shed new light on obsidian utilization throughout the Upper Palaeolithic in Hokkaido. K. Shimada tries to elucidate the beginning of obsidian exploitation in the early Upper Palaeolithic in central Japan. The significant roles of the Central Highlands concerning obsidian procurement and distribution patterns are also discussed. K. Shiba tackles obsidian exploitation patterns from the beginning of the Upper Palaeolithic through to the Incipient Jomon period with 10 distinctive cultural phases in Kyushu, the south-westernmost of the Japanese Islands.

This volume does not aim to set out a testable referential model for interaction between humans and their natural environment through various methods of lithic raw material exploitation in palaeoenvironmental contexts. However, causal relationships between humans and their natural environment are easy to speculate about, though difficult to elucidate. There are three different research levels: the first is the macro-environmental level that is totally independent of human activity or accessibility; the second is the so-called “effective environment” level; the third and final level is the purely archaeological level that is exclusively led by human-made artifact phenomena. The “effective environment” level should be the central target for an explicit discussion of human-environmental interactions.

Finally, I would like to touch briefly upon the background of the international symposium held October 27 - 28, 2012. Meiji University founded the Center for Obsidian and Lithic Studies in April, 2001, but was newly re-organized in April, 2010 for the further enhancement of obsidian studies and international research collaboration networks. The Center’s research proceeds with the following four focuses: 1) Advancement of archeological research enhancing obsidian exploitation in a geological source area, lithic tool production studies, and the reconstruction of circulation systems; 2) Reconstruction of obsidian formation mechanisms, eruption dates, and standardization of obsidian samples, through various physicochemical analyses; 3) Palaeoenvironmental reconstruction during MIS3 and MIS2, with particular reference to Palaeolithic and Jomon subsistence; 4) Establishment and development of international obsidian research networks. Obsidian studies focusing both on fundamental analysis and application research for source identification, as well as on archaeology, are part of the core axis of research at this Center. However, we have also set forth the idea that “human-natural resource environment” studies, concerning the elucidation of human-environment interaction together with archaeological, geological, and palaeoenvironmental studies, should be another part of our core axis. How have humans used their natural resources since the prehistoric times? Because the methods for the exploitation of resources are reflected sharply throughout the different ages of human history, we could link together and evaluate the specific methods and resources from modern perspectives.

Our ongoing project, “Historical variation in interactions between humans and natural resources: towards the construction of a prehistoric anthropography” (Abbreviation: Natural Resource Environment and Humans) is supported by the MEXT (Ministry of Education, Culture, Sports, Science and Technology) program for the Strategic Research Foundation at Private Universities, 2011-2015. This project aims to integrate humans and their natural resource environments as a system, and to construct an anthropography of historical variations. The range of issues with regard to humans and their resource environments covers all of human history. We intend to reconstruct the interactions between humans and their natural environments as a prehistoric anthropography when they live symbiotically with their surrounding resource environment, and to provide a unique viewpoint with which to examine contemporary resource-environmental issues. This project will be the major research body of the Center for Obsidian and Lithic Studies until the end of the fiscal year 2015.

The international symposium held in 2012 was one of our programs to be realized following this guideline. I would like to express my sincere gratitude to all contributors in this volume who have provided us with new research results and perspectives on our own study areas and beyond.