

# Elucidating the culture of human beings in the Ice Age from stone tools, products of the oldest manual technique



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Born in Shiroishi City in 1955. Graduated from the doctoral course of the Department of Anthropology, University of New Mexico. Studied archaeology and prehistoric studies. Has been researching the use of stone tools, etc., mainly in the Paleolithic Age, and comparative cultures in archaeology. Appointed as Assistant and then Assistant Professor at the Faculty of Arts and Letters, Tohoku University before assuming current position.

<http://www.sal.tohoku.ac.jp/archa/home.htm>

Two million years ago, in the Paleolithic Age, humankind had a technique for making stone tools, long before it was able to keep fire. One of Professor Akoshima's research subjects is use-wear marks on stone tools made by striking stone or taking flakes off stone, which elucidate human activities and cultures in daily lives in that era.

The analysis of stone tools includes observing very small traces (or use-wear marks) left on stone tools through a microscope and comparing them with those made in reproduction experiments to study how they were made. Stone tools left in the natural environment are compared with reproduced stone tools that were used to work animal bone or leather, or just flawed. The way a very small chip was made on a stone tool may be of great importance in reconstructing the ancient world. It is a wonder that there are identical use-wear marks on stone tools that have been excavated in countries that have had little historical relationship. It seems that stone tools with the same function look similar regardless of differences in age and place.

This "archaeology as anthropology" pursued by Professor Akoshima is based on the theory of Lewis Binford, the founder of processual archaeology. It is not only intended to reveal the history of the researcher's own country but emphasizes comparative studies as a part of the study of humankind. It aims to reveal how human groups in the same historical background and environment adapted to environmental changes, discover their universal experiences, and study them from a global perspective. This is the field that Tohoku University began to explore in the 1980s, earlier than any other. Use-wear analysis on stone tools is considered a way of comparing cultural remains on a global scale. A goal of this analysis is to join archaeology with anthropology for new development.

This work is like re-experiencing the memory of humankind of the far distant past. Archaeology is a long-range study that is synchronized with a remote past beyond time and space. Professor Akoshima says that hands-on and field-oriented approaches are important. They are also looking at the problem of reliably passing on archaeology to future generations in the form of theoretical anthropology.



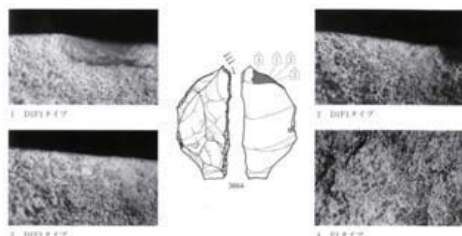
Professor Akoshima leads the use-wear mark research team of Tohoku University. They inherited a tradition of empirical studies from Professor Chosuke Serizawa who performed great work as a leader in the study of Paleolithic tools in Japan.



They observe use-wear marks on stone tools through a digital microscope, a laser microscope and/or a metallurgical microscope, and compare them with reproduced stone tools. Modern archaeological means do not miss even extremely small marks such as micro flaking, linear marks and wear gloss. In the field of use-wear marks on stone tools, the laboratories of Tohoku University have led the world since the 1980s. Methods used and developed by Tohoku University are now used as standard methods not only in Japan but also in other Asian countries.



Drawers where materials for comparison from 600–700 cases are organized. Only a few academic institutions have materials for experimental comparison under set conditions. Important archaeological materials are also stored at the university.



Use-wear polish on a stone tool called a "Chokokuto (burin)" (Excavated from the Araya site in Niigata Prefecture, Upper Paleolithic Age). It has marks showing that it was used to make tools from animal bones or deer antlers, or process animal leather.

### My favorite

Shale and obsidian (volcanic glass), are the main materials of excavated artifacts from ruins in the Tohoku region. Leather is a cushion material on which a stone tool is pressed in processing it. It is elastic and protective against injury. Tools for experimentally making stone tools include a flaking tool made of a deer antler, and a stone hammer, used to strike and break stone. Prof. Akoshima demonstrated how to make a reproduced stone tool.

