

Lithological backgrounds of the stone tools from the Tell Ghanem al-Ali archaeological site in the Middle Euphrates

Yusuke Katsurada^{1*}, Kazuhiro Tsukada¹, Mitsuo Hoshino¹, Takeshi Saito², Tsuyoshi Tanaka¹, Toshio Nakamura¹, Hidekazu Yoshida¹, Manchuk Nurumkhaan³

¹Nagoya University, ²Meijo University, ³Mongolian Univ. of Science & Technology

A major homeland of the nomadic tribes, builders of cities in the large scaled states such as Babylonia and Assyria, is said to have been in the Bishri Mountains located in the Middle Euphrates region, northeast of Syria. It is often emphasized that the Middle Eastern cities are still characterized by principles and systems of the tribal communities. It is important to understand this Semitic tribalism, which influenced both of the ancient civilization and Islam.

In order to contribute to clarify this Semitic tribalism from geoscientific points of view, we attempted to speculate the lithological backgrounds of the stone tools that were found at the Tell Ghanem al-Ali, the archaeological site of Early Bronze Age located in the Middle Euphrates, through the lithological compositions of the stone tools and gravels from the gravel beds and geological survey of the neighbouring places including Bishri Mountains.

Stone tools from the Tell Ghanem al-Ali:

The tell was excavated by archaeologists setting two rectangular areas and plenty of stone tools were registered as the relics. More than 400 samples were randomly chosen out of the registered stone tools. Additionally, approximately 500 stone tool samples were collected from the surface of the tell excluding the excavation rectangles. The sizes and the lithological compositions of these two stone tool sample groups were investigated. More than 90 % of the stone tools were resulted to be fine silicious tuff and the other rock type was rhyolite, quartzite, chert, basalts, etc. More than 80 % of the stone tools have the natural surfaces of gravels. Fine silicious tuff contains foraminifer fossils, and chert contains radiolaria fossils inside. It is quite rare but a few stone-tool-originated gravels were recycled as stone-tools.

Local geology:

The rocks around Ghanem al-Ali consist of Neogene sedimentary rocks and Quaternary sediments of various origins. The Neogene sedimentary rocks, the basement of the area, consists of gypsum with fine-grained acidic tuff intercalations. The Quaternary sediments are mainly made up of well-stratified silts, sands and pebbles overlies the Neogene sedimentary rocks abutting with unconformity. The granules, pebbles and boulders, clast-supported, well sorted, generally include well-rounded flatten clasts of red chert, granites, rhyolite, basalt and fine silicious rocks in a matrix of middle grained sands. The deposits are generally well stratified with various kinds of sedimentary structures such as grading, cross-bedding and clast imbrications. More than 500 samples were randomly collected from the five locations of Quaternary sediments to investigate lithological differences. Fine silicious tuff was 5-20 %.

Origins of the stone tools:

The most of the stone tools found at the Tell Ghanem al-Ali have natural surfaces of gravels. It indicates that the people lived in this area in Early Bronze Age had no communication with the other stone-tool cultures in Bishri Mountains. The high percentage of the fine silicious tuff among

the stone tools comparing the low percentage in the original beds also indicates the people had a knowledge to identify the proper rock type for stone tools.

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