



Fig. 1. An example of petroglyphs from the copper age. They are carved on a hard flat rock face in the valley of Samishsay, Uzbekistan (photo by R. Takaki).

expected that they may enable more reliable comparisons between petroglyphs of various regions.

Two different methods are proposed, one is to characterize styles (shapes) of each petroglyph by the use of a computer software for image analysis, and the other is to make statistics of quantities which are considered to characterize the properties of the groups of petroglyphs. The group is defined as a group of petroglyphs carved on the same rock. It is assumed here that the group of petroglyphs on the same rock were drawn by the people belonging to the same village at the same age. Although it is not always assured, it will be allowed to begin analysis on this assumption. These methods are neither completed nor approved by many scientists yet, and improvement is necessary in future. However, the present authors believe that it is meaningful to propose new methods and to make them open for criticisms by many people. In the following the basic problems concerned to the present methods are discussed.

The style of a petroglyph can be described in many ways. Sizes (or the ratios of sizes) of parts of bodies are good measures for that purpose, as was done by (SHER, 1980). On the other hand, a total configuration of these parts is also important to identify styles. Different configurations of parts of an animal (or a human) body often give us different impressions. However, there is also a difficulty in characterizing the configuration. Here, as a candidate of characterization of topological properties of an animal shape is observed, since they are defined relatively easily without ambiguity. For that purpose the shapes of petroglyphs