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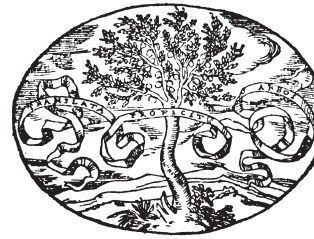
in Afghanistan 1957-2007

Fifty Years of Research in the Heart of Eurasia

Proceedings of the symposium held in
the Istituto Italiano per l'Africa e l'Oriente,
Rome, January 8th 2008

edited by Anna Filigenzi and Roberta Giunta



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CONTENTS

Michele Bassetti

THE LITHIC INDUSTRY OF HAZAR SUM: A BRIEF GEOLOGICAL NOTE

A sample constituted of 20 stone specimens chosen on the basis of their peculiarity from the new series of Hazar Sum stone artefacts presented by Micheli (this issue) has been preliminarily studied from a geological point of view to determine first the lithotypes and secondly the raw material procurement strategy. The sample represents about 11% of the lithic assemblage found in Rome in 2006. The physical characteristics of the raw material presented below are based on macroscopic visual examination with the aid of a binocular microscope (magnification 10X and 20X).

The stone artefacts analyzed are all made of a variety of fine-grained flint generally of good quality and characteristic of limestone formations with embedded flint nodules and layers. The flint colour, recorded using Munsell Soil Color Charts (Munsell 1994), ranges from brown and very dark greyish-brown (10YR 5/3-3/2) to olive brown (2,5Y 4/3). It has a cryptocrystalline and microcrystalline texture in which some inclusions formed by punctiform carbonate residues and small iron oxides are visible. The translucency is glassy, while the appearance is opaque. The natural surface of the artefacts is formed by a calcareous cortex with a thickness of up to 1 cm, in which iron oxides have been found. The cortex extension is generally lower than 25%, but some pieces display an area with a 75% cortex extension.

The flint contains many inclusions, among which we identify tiny holes produced by the dissolution of the carbonates and whitish, sub-rounded patches forming long bands with no clear edges. The latter are interpreted as partially substituted inclusions. The presence of lamination residues is sporadic, while bioturbations by benthonic organisms are common. The fossiliferous content is frequent and consists in siliceous sponge spicules and foraminifera, in particular *Peneroplidae* and *Miliolida*[1] dated to the Upper Eocene. These data suggest a marine ambience of the inner shallow platform type which gave origin to sedimentary rocks such as the limestone formations of the Tertiary period located in the Samangan area, from which the fine-grained flint was quarried.

The physical aspect of the stone artefacts is fresh: the white patina is absent or, when present, is thin; this could suggest that the artefacts laid in an alkaline environment after the manufacturing process, and might thus have come from a post-depositional context found in the entrance-hall of caves and rockshelters formed by carbonate rocks. Indeed, deep whitish patina, resulting from an open depositional context in evolved soils on stable geomorphological surfaces, such as old river terraces, mesa hills or plateaux, is not so common. Finally, the large amount of pseudo-retouch has a post-depositional origin due to physical events, such as slope processes and cryoturbation, or to human action, for example agricultural activity.

This geological evidence, corroborated by the information given by the most recent geological map of Afghanistan (Doebrich et al. 2007), confirms the field observations made by the archaeologists who visited the

[1] The foraminifera determination was made by Dr Marco Avanzini from the Museo Tridentino di Scienze Naturali of Trento (Italy).

Hazar Sum area in the past (Puglisi 1963; Davis 1978) and noted the large amount of manufacturing debris near the raw material outcrops. This indicates that the flint procurement strategy of the Hazar Sum lithic industry was largely local, thanks to the abundance of excellent nodular flint outcropping on the sides of the *wādī* channels in the Hazar Sum area.

The archaeological context and the geological data are therefore particularly interesting and we hope that the geopolitical situation in Afghanistan will soon improve, so that this preliminary analysis can develop into a more thorough geoarchaeological research aimed at investigating further the raw material procurement strategy and the patterns of subsistence of prehistoric men in the Samangan region and in the Hazar Sum area in particular. This research could be divided into four phases: a bibliographic study of geological and paleontological issues; a field investigation of the stratigraphic sequence; a survey of the region to verify the existing geological map; and finally a laboratory analysis (using an optical and polarising microscope, SEM-EDS, etc.) on the samples collected in the terrain to validate field data.

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