The Lithological Landscape of the Greater Petra Region

Availability of Flint and other Abiotic Resources

Introduction

The "Lithological Landscape of the Greater Petra Region" is part of a Ph.D. dissertation which has been completed at Freie Universität Berlin (Penschütz 2018).

A first raw material survey was carried out in September 2012 under the auspices of the University of Bamberg and in collaboration with the Jordanian Department of Antiquities. The research aimed at providing an archaeological framework on Flint Raw Material availability and geological distribution at the Greater Petra Region. It is also of continuing the first Raw Material Group system (FRMG) (Kuhn et al. 2004), which is applied here, with the geological evidences of related sources areas. The FRMG system was initially established on base of artifacts from the Butta excavation (FRMG 1-9) and has been later extended according to the first survey find at other sites of the Greater Petra Region (such as Al 4, Al 3a, Bedha and Shihet Mased in Penschütz 2013: 2014). The correlation of site-establish raw material classifications with their geological availability and distribution is considered a decisive methodological step to investigate the procurement modes involved with specific raw materials and an important contribution to the reconstruction of prehistoric socio-ecosystems.

According to geological maps of the Greater Petra Region, flint occurrences can be embedded in several Cretaceous to Tertiary geological formations (Tab. 1). Eravas 1988, 1990; Berenger 1998; Kharfan 1998; Tahawan 2002). The Esorese Umren Rift formation (URF) and the Tabban or Cossoon Anranan (KARF) and Lime resource formation (ASL) are described as abundant in flint layers, while others such as the Nafsl Limestone (NL), Khirki er Si Limestone (VSFL), Wadi Umren Qhidran (WQ), Al-Hiru Phosphate deposit and the Mauzun Chubkeu Moor formations (MCMF) can also bear flint occurrences, although only in minor quantities.

Methodology

The survey areas (No. 1-15, Fig. 2) were chosen according to their geological settings and their distance and accessibility from the Early Neolithic site Al 4, Butta, Bedha and Shihet Mased. The survey was carried out by walking transects through potentially flint-bearing geological formations (Tab. 1, Fig. 2). Additionally, weals in the site vicinity were checked for their flint contents. Sources and outcrops of flint and other knappable rocks were recorded as sample points. Each sample point was recorded by GPS, photographs and a site description. The descriptions included the classification of the site primary source, secondary source, extraction site, knapping ground, etc. A source description, a classification of the associated artifacts found there, an estimation of their number and a description of the available raw material spectrum (Raw Material Group, color pattern, shape, dimensions, texture, color, features, and, for primary aquatic, geological contexts). When possible, raw material samples were taken for petrographic analysis.

Results

44 sample points have been described during the raw material survey and 251 flint samples were taken from both primary and secondary source areas (Fig. 2). Several FRMGs could be identified within the surveyed geological settings. These include FRMG 1, 2, 3, 4, 5, 6, 10, 11, 12 and 13, with 1 and 2 as well as 9 and 10. Additionally, five samples in FRMG 3a, 5a, 10 and 11 were found only in secondary position. Not assessed are FRMG 3b, 4, 7, 25 (pink purpurite), 26, and orthosparite.

FRMG 3g appears to be a ripened form of FRMG 3d (Penschütz 2018) and FRMG 5g might be the same as FRMG 7. The Abi Aloukkique (Kuhn et al. 2014), which could be a FRMG later near Jebel Kifkem, FRMG 6 (and probably a nodular variant of FRMG 2) might originate in the Negev.

Among the attested FRMG there is a high concordance between geological formation and FRMG. Exceptions are FRMG 3c, 4, 10, and 11. However, FRMG 3c, 4, 10, and 11 have significant differences in density and regional distribution, particularly for URC-associated FRMG.

Occasionally, flints were also observed at other formations (WQ, ASL), although they occur in very low density and of poor quality and do not match any established FRMG. The only exception is Juhita-Find (tabular FRMG 2) which is abundantly found in secondary position in Sawzoon Lake Sediments (Kuhn et al. 2014). However, its associations with FRMG 1 indicate a former origin from eroded URC layers.

The high degree of correlation between archaeologically established FRMG and specific geological formations of the Greater Petra Region (Fig. 6) makes flint a promising material to study in regard to its acquisition and distribution modes within early Neolithic time sequences.

Bibliography

[References]

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