

Book of Abstracts

**Aegean Acheulean
at the Eurasian crossroads
Hominin settlement in Eurasia and Africa**

An international conference organised
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25 -29 June 2022

The Museum of Industrial Olive-Oil Production
Lesbos Greece





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archaeological deposits. The VHRI acquired at different stages of the excavation were processed for the creation of digital surface models (DSMs), high resolution orthophotomaps, 3D point clouds and 3D models.

The Acheulean site of Rodafnidia: geology, stratigraphy and chronology

**Giorgos Iliopoulos¹, John Alexopoulos², Penelope Papadopoulou¹,
Avraam Zelilidis¹, Spyros Dilalos², Nikos Voulgaris², Andy Biggin³,
Lee J. Arnold⁴, Ninon Taffin⁵, Nena Galanidou⁶**

¹ Department of Geology, University of Patras, Greece

² Department of Geology and Geoenvironment, National
and Kapodistrian University of Athens, Greece

³ School of Environmental Sciences, University of Liverpool, UK

⁴ School of Physical Sciences, University of Adelaide, Australia

⁵ Center of Physics Applied to Archaeology, Université Bordeaux Montaigne, France

⁶ Department of History and Archaeology, University of Crete, Greece

This paper presents the methodology and results of systematic geological, geomorphological, geophysical, stratigraphic and geochronological work conducted in the Rodafnidia area. During the geological survey in the wider area of the Lisvori alluvial plain, Middle Miocene volcanic rocks, Pliocene marly lacustrine limestones and marls as well as Quaternary deposits were identified and mapped in detail. The substrate of the latter deposits mainly consists of ignimbrites, added to which there are marls. For stratigraphic investigation of the artefact-bearing sediments, two different survey practices were employed: 1x1m test pit opening and digging 34 deep, elongated trenches 1.5-2m wide and usually up to 10m long, using a backhoe excavator. With depths ranging from 0.5 to 6m, the latter method provided a clear spatial and temporal picture of the Rodafnidia stratigraphic sequences. The sediment sequences in all test pits and trenches were described and photographed, sediment samples were collected for sedimentological, micropalaeontological and dating analyses, and section logs were provided for each test pit and trench. Geophysical research aimed to determine the thickness of the Quaternary fluvial deposits, as well as the depth of the pyroclastic flow of the ignimbrite at Rodafnidia. The geoelectrical method was selected in order to investigate the resistivity distribution



in depth and delineate the boundaries of the ignimbrite formation. Thus, 21 vertical electrical soundings (ves) were performed. Furthermore, horizontal investigation of the resistivity distribution was conducted by applying electrical resistivity tomography (ERT), a high-resolution technique chosen to depict the horizontal heterogeneity of Quaternary fluvial deposits. This was used to produce a 160 m geoelectrical profile.

Stratigraphic study of the sequences revealed the existence of two main sub-areas active during the Middle Pleistocene in the Lisvori half graben, one on the west and the other on the east side of Rodafnidia. Also, a minor sub-area practically connected with that in the west was located around Trench XIII. The two main sub-areas at Rodafnidia were separated by a watershed now located along the central section, taken up by the Hatzistamatiou, Zeimpekis and Prokopiou plots. In these plots, the ignimbritic substrate is either exposed to the surface or was exhumed after the topsoil (less than a meter thick) was excavated by the backhoe (e.g. trenches XII and XXV). The ignimbritic substrate in the west sub-area was identified as having resistivity values of between 24 - 58 Ohm.m, ranging between depths of 0.5 to 30 m. Lithic bearing clastic deposits (5 - 18 Ohm.m) were found lying above the ignimbrite. Finally, a third formation (6 - 20 Ohm.m) was discovered, located below the pyroclastic flow, ranging between depths of 14.5 to 70 m, indicating a thickness of between 14 and 40 m for the ignimbrite.

Two of the three sub-areas—the west one and Trench XIII—contained lithic artefacts. The west sub-area contains the main lithic bearing clastic sequence, consisting mainly of seven Units (Units 0 - 6). Even numbered Units (0, 2, 4, 6) are made of fine-grained sediments, representing floodplain deposits left during highstands, whereas the coarse-grained or conglomeratic odd numbered Units (1, 3, 5) were unconformably deposited in between the fine-grained Units during lowstands, representing fluvial channel deposits. Lithics are found in the odd numbered Units and mainly in Unit I as transported and reworked coarse clasts.

Over the lifespan of the Palaeolithic Lesbos Project, various geochronological approaches have been employed to date the Rodafnidia sequence, namely Palaeomagnetism, p-IRIR OSL, TCN and ESR. Test trials of the last two methods did not yield any sensible results and thus were not pursued any further. Palaeomagnetic measurements were successful in producing stable results and gave no compelling evidence for anything other than normal polarity magnetization being recorded in the sediments from Units 2 and 4. p-IRIR OSL returned ages in the second half of the Middle Pleistocene, which are



considered the minimum for hominin presence. Here we discuss the two sets of luminescence dates obtained from different laboratories, at DEMOCRITOS and the University of Adelaide, along with the preliminary results obtained from an ongoing third dating project undertaken at the University of Bordeaux Montaigne.

Lithic Raw Material Economy and Provenance at the Acheulean site of Rodafnidia, Lesbos

Elli Karkazi¹, Andreas Magganas², Nena Galanidou¹

¹ Department of History and Archaeology, University of Crete, Greece

² Department of Geology and Geoenvironment, National and Kapodistrian University of Athens, Greece

Study of the lithic raw material economy holds the potential to shed light on Palaeolithic survival strategies, patterns of exploitation of natural resources, modes of mobility and adaptation to specific environments. The Acheulean site of Rodafnidia is amenable to such an investigation by virtue of its large assemblage of Acheulean artefacts firmly dated to the second half of the Middle Pleistocene, which has no counterpart in the Balkan or W Anatolian peninsulas to date. In this paper we address lithic raw material procurement and usage strategies at Rodafnidia. Our work began in the course of EK's PhD and is ongoing as part of her post-doctoral research. The sample studied comprised 1430 lithic artefacts recovered in consecutive field expeditions conducted between 2010 and 2021, and includes two subgroups: artefacts originating from the excavated sedimentary layers and artefacts collected during surface survey. A two-pillar methodology combining fieldwork and lab research was applied, with archaeological finds being examined macroscopically. Linear measurements (maximum length, width and thickness), as well as Width/Length and Thickness/Width ratios were recorded for handaxes and cleavers. A number of geological and archaeological samples were examined by means of macroscopic, microscopic, X-Ray Diffraction and Inductively Coupled Plasma Mass Spectrometry analysis in order to reveal their mineralogy and geochemistry. The primary and secondary sources of all rock types used have been identified within a local radius from Rodafnidia. Most of the locally available raw materials were used by the Acheulean tool-using hominins of