Rock Art from Evros Region in Northern Greece

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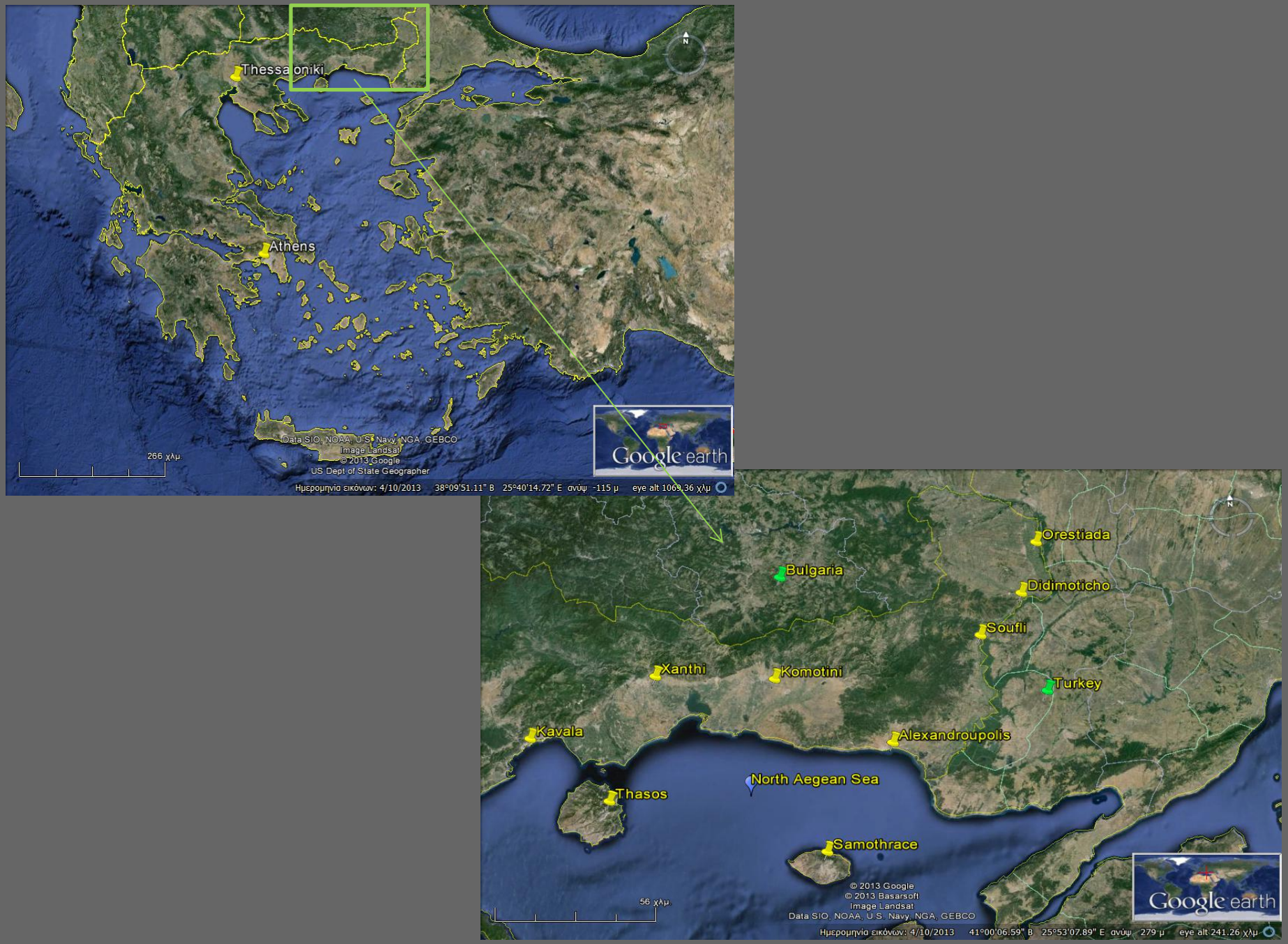
Thessaloniki
Athens
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
© 2013 Google
US Dept of State Geographer
266 χλμ
Google earth
Ημερομηνία εικόνων: 4/10/2013 38°09'51.11" Β 25°40'14.72" Ε ανύψ -115 μ eye alt 1069.36 χλμ
Orestiada
Bulgaria
Didimoticho
Soufli
Xanthi
Komotini
Turkey
Kavala
Alexandroupolis
North Aegean Sea
Thasos
Samothrace
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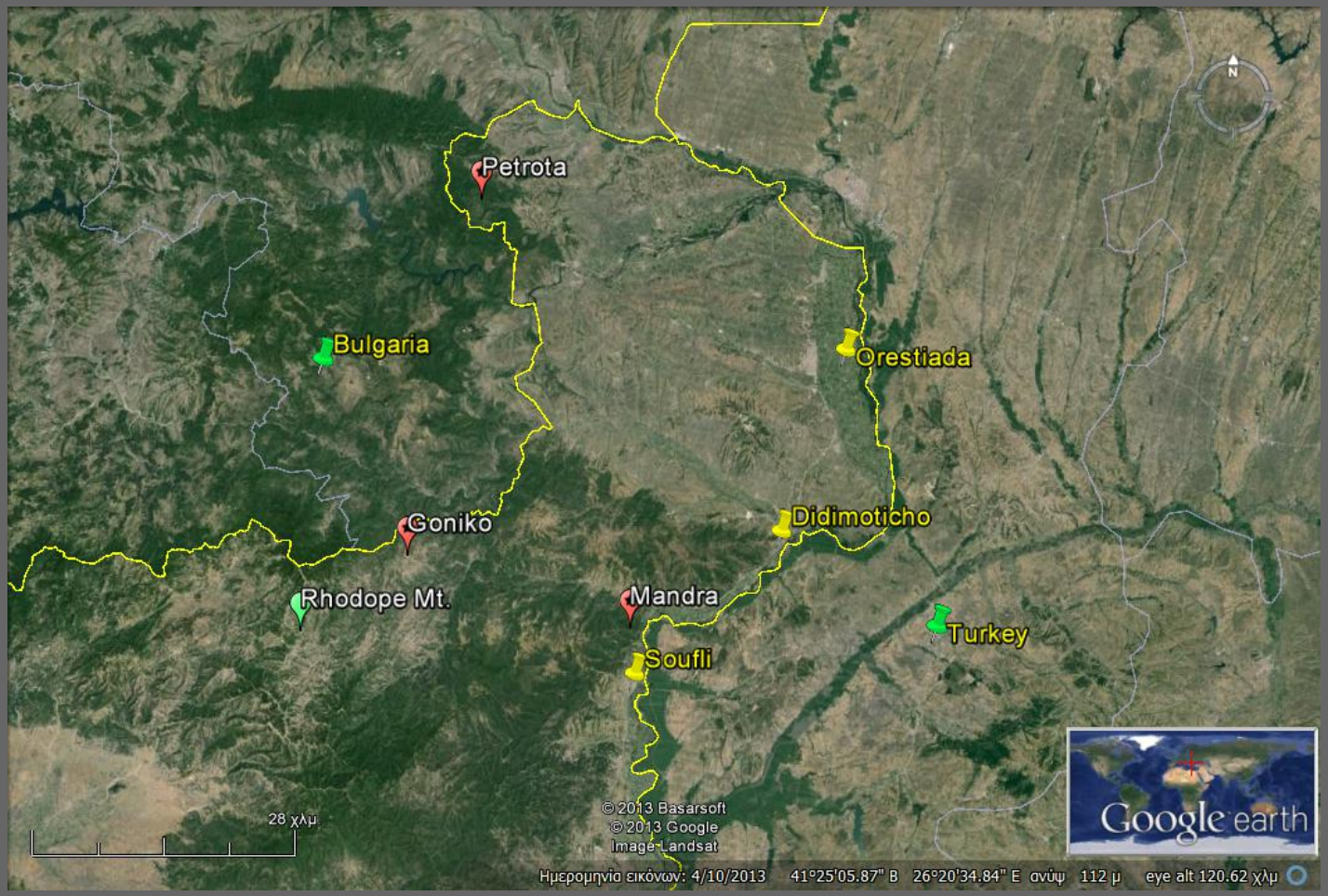
Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
56 χλμ
Google earth
Ημερομηνία εικόνων: 4/10/2013 41°00'06.59" Β 25°53'07.89" Ε ανύψ 279 μ eye alt 241.26 χλμ

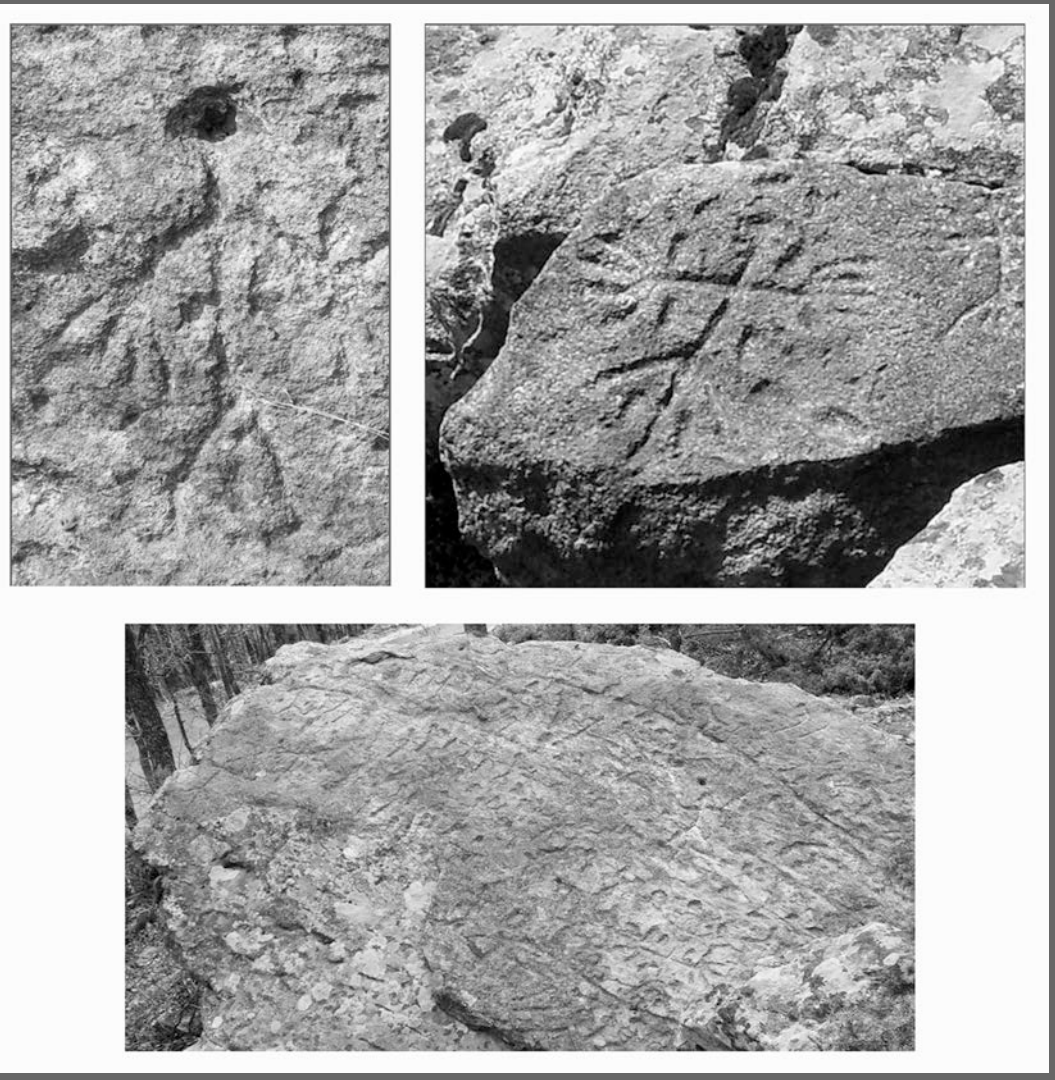
Location & Distribution of Rock Art in North Evros Region



Goniko

Site of Goniko, Anthropomorphic Figures, Late Bronze Age.

Goniko



Mandra Rock Art: Fragka

Mandra Rock Art: Fragka

Mandra Rock Art: Fragka

Mandra Rock Art: Fragka

Fragka rock 1

Mandra Rock Art: Fragka

Location of rock 2

Cleaning rock 2

Mandra Rock Art: Fragka

Rock 2 panel

Mandra Rock Art: Fragka

Close up and details

Mandra Rock Art: Fragka

Rock 2 details: depiction of scales

Mandra Rock Art: Fragka

Documentation of Rock 2 at Fragka

Mandra Rock Art: Fragka

Charcoal at the base of rock 2

Exfoliated fragment with decoration

Mandra Rock Art:
Fragka

Institute of Materials Science,
National Center for Scientific Research
DEMOKRITOS,
Neapoleos 27, Aghia Paraskevi,
153 10 Athens, Greece

Scanning Electron Microscope (Scanning Electron Microscopy, SEM)

The scanning electron microscope (Scanning Electron Microscopy, SEM) is an instrument that operates approximately the same as an optical microscope by using high-energy beam of electrons instead of light in order to examine objects on a detailed scale.

Electrons due to their wave nature, as light waves, may focused on a much smaller area (e.g. grain material). The electron beam scans the sample surface with which it interacts. This interaction generates information in relation to atoms of the components of the test material. From those atoms mainly emitted secondary (secondary) and backscattered (backscattered) electrons and X-rays.

The intensity of the emitted electrons is affected by surface characteristics. Thus SEM provides information focusing on morphology and composition of the surface.

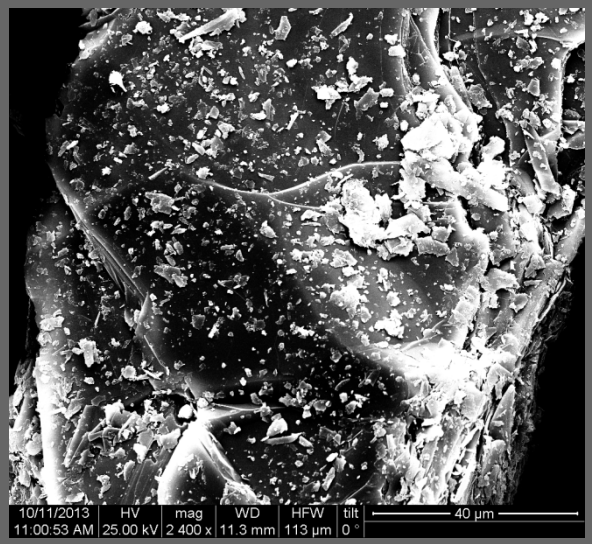
Scanning Electron Microscope (Scanning Electron Microscopy, SEM)

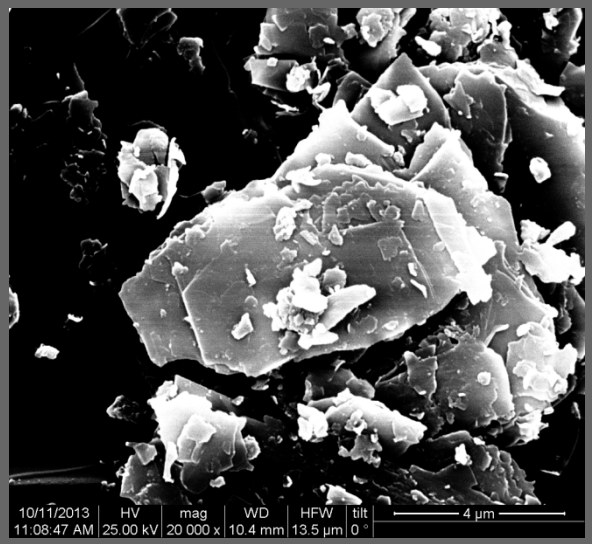
Through the application of detection system of the dispersion of action of X-rays generated at the surface of the incident beam can be made semi-quantitative elemental analysis of the material. Therefore, SEM is used to examine the microstructure of solid samples in micro and nano scale resulting images of high penetration rate.

Analyzes for determining the chemical composition of sample (1) and (2) Fragka performed with the system for elemental microanalysis X-ray spectrometer energy dispersive (Energy Dispersive X-ray, EDX) of scanning electron microscope (Scanning Electron Microscopy, SEM) of Institute of nanoscience and nanotechnology In N.C.S.R. Demokritos. Samples were entrapped by using an epoxy resin. Relied on SEM stubs with adhesive carbon disk and placed in the scanning electron microscope for elemental analysis. Results presented on the following tables.

Table 1.: Elementary analysis of oxides for sample 1

Elem	Wt %
MgO	29.76
Al_2O_3	2.56
SiO_2	47.87
CaO	1.58
Cr_2O_3	1.45
Fe_2O_3	13.43
NiO	1.39
CuO	1.96



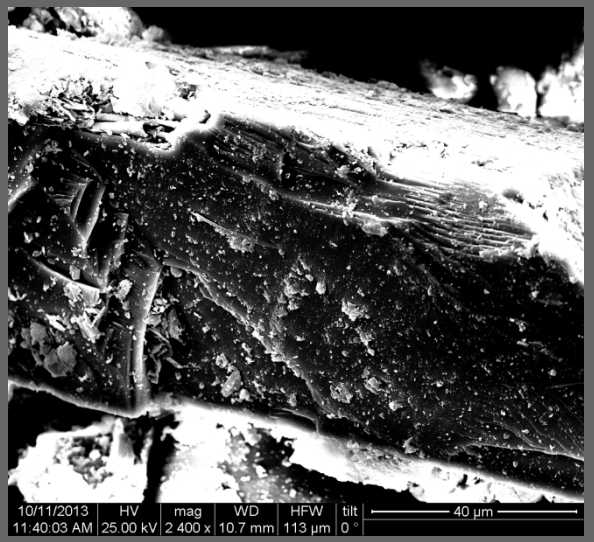


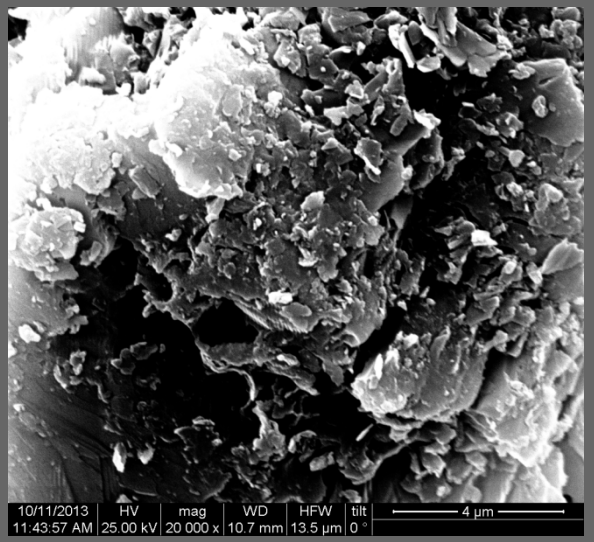
Images of 2400 and 20000 magnitude for sample 1

Table 2.: Elementary analysis of oxides for sample 2

Elem	Wt %
Na_2O	7.11
MgO	2.97
Al_2O_3	22.78
SiO_2	56.32
K_2O	2.93
CaO	2.15
Fe_2O_3	3.95
CoO	1.79

Images of 2400 and 20000 magnitude for sample 2





Elementary Analysis - Results

The results demonstrate the participation of 8 oxides in both sample composition (Table 1, 2). Specifically identified the oxides MgO, Al_2O_3, SiO_2, CaO, Cr_2O_3, Fe_2O_3, NiO, CuO for sample 1 and Na_2O, MgO, Al_2O_3, SiO_2, K_2O, CaO, Fe_2O_3, CoO for sample 2. Both samples presented high percentages of silicate oxides SiO_2 (47.87% and 56.82% respectively)

In sample 1 the higher concentration that follows the silicate oxides is MgO oxides (29.76%) while in sample 2 follows aluminum oxide (Al_2O_3 22.78%). For sample 2 the dominant presence of silicon oxide (SiO_2), i.e. the mineral quartz in combination with aluminum oxide (Al_2O_3), the presence of which is attributed to the mixture of clay minerals, represent minerals of aluminosilicate base. The oxides of iron and magnesium justify the dark black-grey color, while iron oxides in combination with titanium oxides may indicate potential effect from a granule iron-titanium mineral which is incorporated in the mixture. The incidence rates of oxides of alkali (CaO and Na_2O) correspond to the presence of feldspars.

Mandra Rock Art: Grammeni Petra

Location

Mandra Rock Art: Grammeni Petra

Themes and techniques

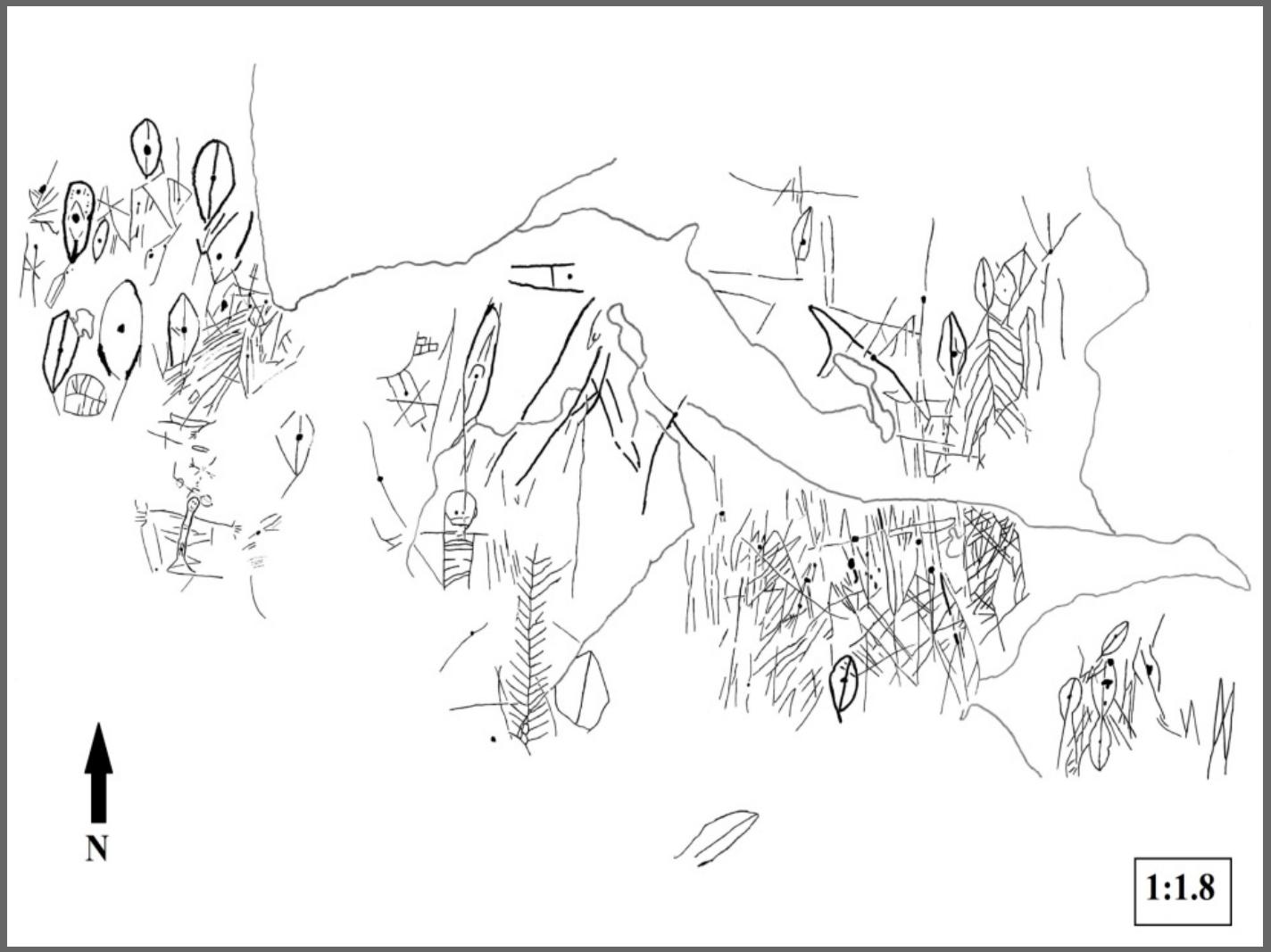
Mandra Rock Art: Grammeni Petra

Themes and techniques

Mandra Rock Art: Grammeni Petra

Fragments detached from the main body

Mandra Rock Art: Grammeni Petra



Documentation of southwestern part of Grammeni Petra

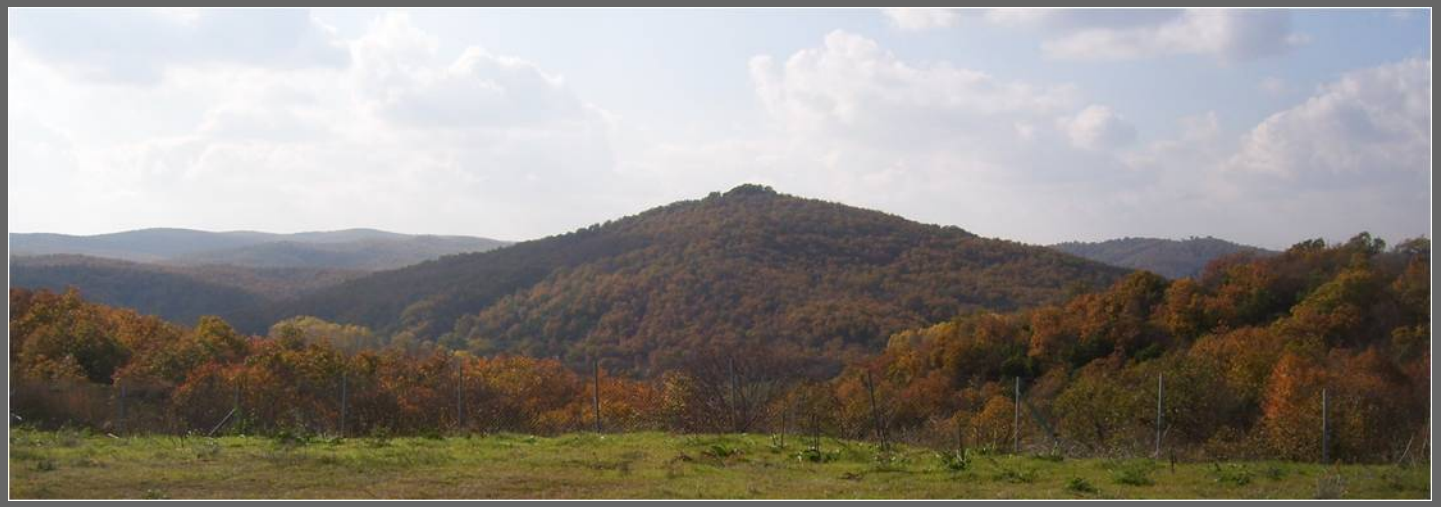
Petrota Rock Art

Trapeze – shaped rock located south of the village of Petrota

Petrota Rock Art

Rock shelter located south of the village of Petrota. Municipality of Orestiada

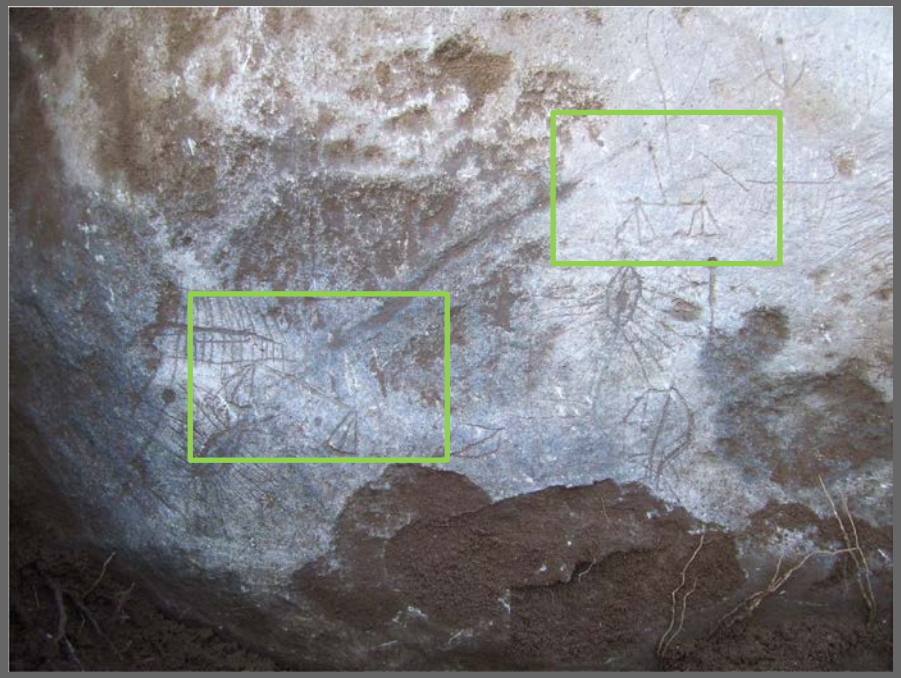
Chronology & Cultural Identity



Vigla Hill or Vigla’s Vulva mentioned by local people

Handmade Bronze Age ceramics found during surface investigation

Chronology & Cultural Identity



Depiction of Scales on Rock 2 at Fragka

Golden scales of Mycenae. 16th c. BC
National Museum Of Archaeology, Athens

Chronology & Cultural Identity
“Psychostasia”

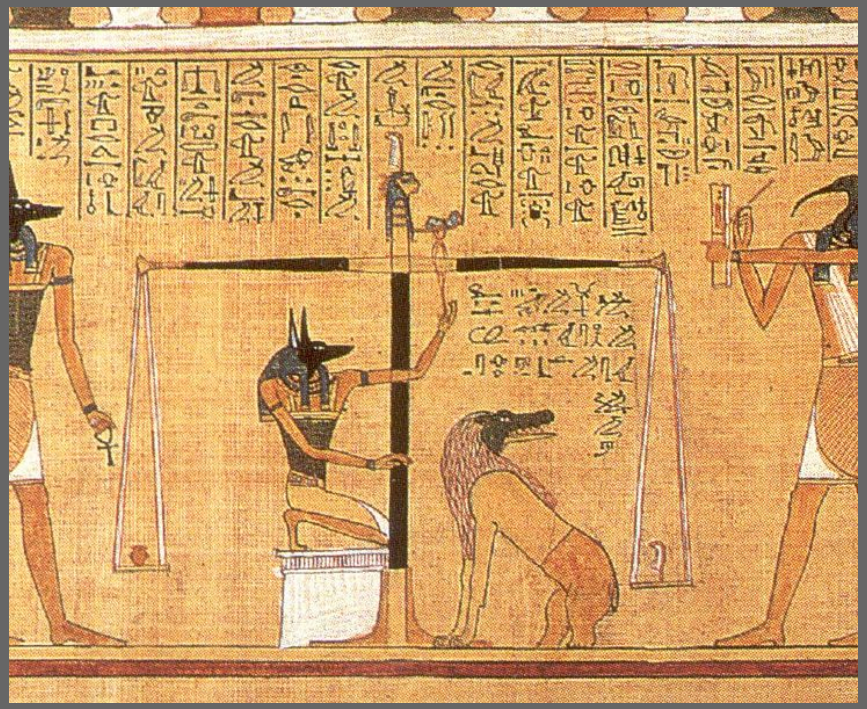
The relation of the anthropomorphic motifs to the scales and fertility symbols (site Fragka, rock 2) indicates the eschatological dimension of the narration. The scene leads us to the supposition that it concerns a belief under the term "*weighing of souls»* or as “*psychostasia*” (in Greek: *ψυχοστασία*). As an idea, this belief has to do with the weighing of souls on scales after death. The idea of weighing souls was already known from the 16th century BC in the Mycenaean world and this arises from the findings of the arched tombs exhibited at the National Museum of Archaeology in Athens.

Chronology & Cultural Identity
“Psychostasia”

Arched Tomb III of Mycenae (Tomb of the women). Golden scales of psychostasia decorated with Butterfly figure, symbol of the soul (16th c. BC).

Arched Tomb, Vafio Lakonias, Scales of Psychostasia (15th c. BC)

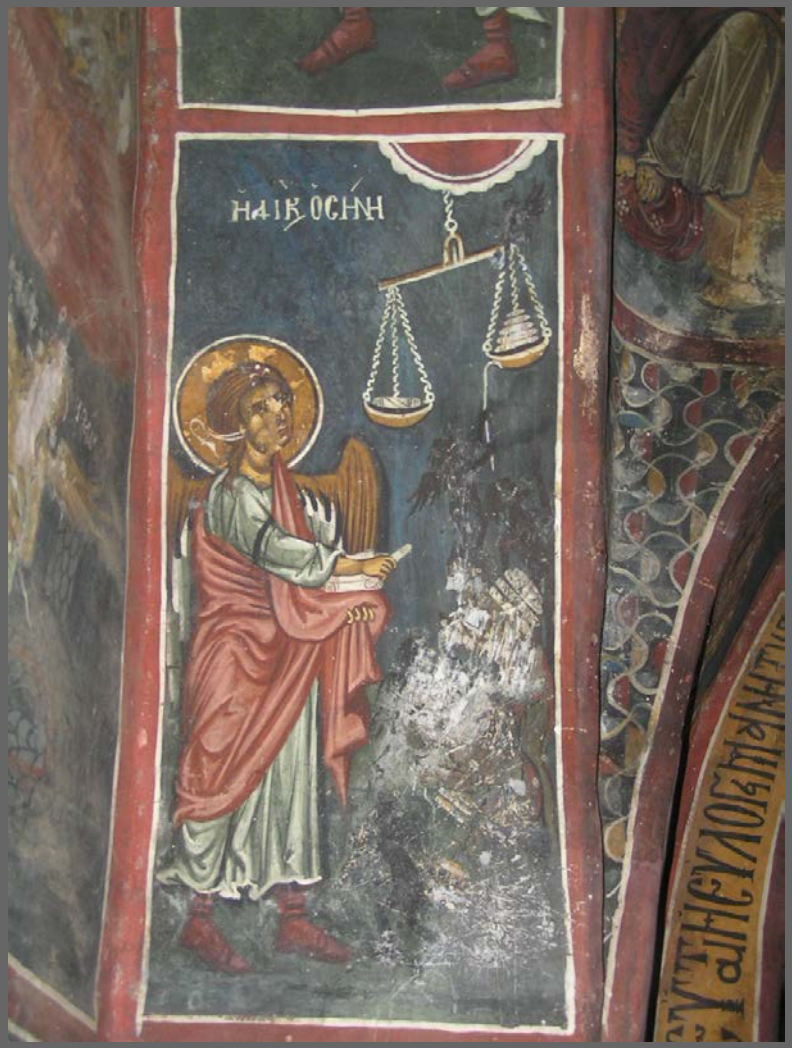
Chronology & Cultural Identity
“Psychostasia”



Papyrus of Hunefer, 1375 BC, British Museum

Lekynthos from Capua. 5th c. BC, British Museum

Psychostasia as Justice in Byzantine Iconographical Tradition



Church of Panagia Asinou, 12 c., Cyprus

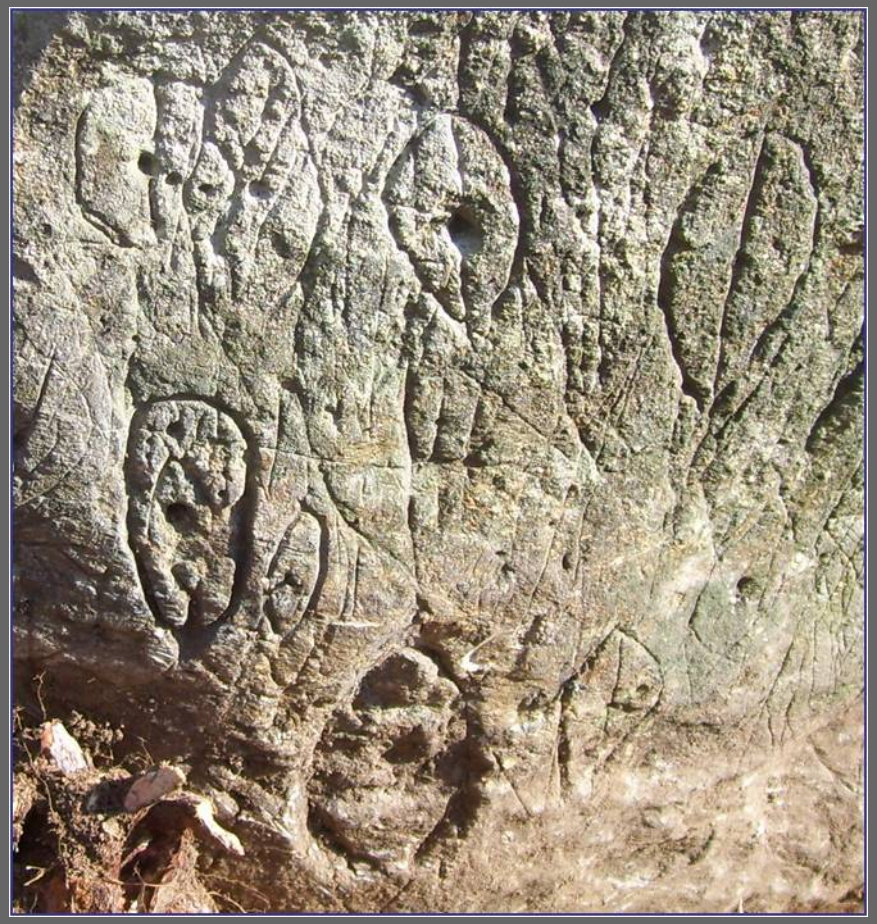
Chronology & Cultural Identity
Female Figures, Fertility Symbols

Fragka rock 1

Grammeni Petra

Fragka Rock 2

Chronology & Cultural Identity
Female Figures, Fertility Symbols



Credits

Site Photos – Giorgos Iliadis & Stamatis Palazis

Tracings & Documentation – Giorgos Iliadis

Museum & Exhibition Photos – Giorgos Iliadis

Labs, composition & analysis – Ellisavet Dotsika

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