S24 Digital rock art documentations, new perceptions

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The documentation of rock art has a tradition that spans over one hundred years, during which several methods have been tried and tested. Today, the traditional tracing method is the most commonly used all over the world. Digital methods of documentation have, however, in more recent years begun to challenge and supplement the traditional methods for documenting rock art. Laser scanning, photogrammetry, and other digital methods, are providing new ways of recording and presenting rock art, and are better suited to web based or other digital presentation forms. This session will explore these new tools and discuss the results and challenges they present. Questions will be addressed, such as will digital methods improve the documentation of strongly weathered figures, will the results be transferrable to general publication forms, and will digital methods be able to compete in terms of cost?

S24-01 New eyes to old graphics. Rock art in the Emirate of Sharjah

Xosefina Otero

In this paper we present new methods of the documentation and registration of the petroglyphs of the exceptional archaeological site located on Khor Fakkan, emirate of Sharjah, on the east coast of the United Arab Emirates along the Gulf of Oman, and coordinates 24º59'06.06" N - 56º20'36.70" E.

The engravings on the surface of the serpentine rock fragments, of the Semail ophiolite complex that was generated when the Saud- plate was introduced under the Iran-Zagros, in the Cretaceous, are made with the technique and striped characteristic of the Bronze Age-2000 BC schematic style. We intend to elaborate on their study ensuring their conditions and perfect conservation using the latest technologies available and employing the working methods of the archaeology of the landscape, which analyses the spatial dimension of the human group that performed it.

One of the our new tools to be analysed is the EyesMap tablet, a new professional device that allows the measurement and real time 3D modelling and scanning the stone supports and recording them in three dimensions. The new equipment uses computer vision techniques fused with large and close range photogrammetry, infrared and stereoscopic RGB cameras, sensor calibration precision. The research focuses on advanced measurement techniques that allow to make the virtual reconstruction of the site and the petroglyphs details and fit it in its original landscape to reproduce the environmental conditions in which the authors of the petroglyphs and their communities lived.

S24-02 Documenting facades of Etruscan rock–cut tombs: From 3D recording to archaeological analysis

Tatiana Votroubeková

Etruscan rock-cut tombs with decorated facades are located only in area of inland southern Etruria, now region Tuscany and Lazio in Italy. These tombs were constructed from second quarter of the 6th century BC to the end of 3rd / beginning of the 2nd century BC in natural vertical tuff cliffs. Decoration of the facades is carved into the rock and reproduces architectural elements and in the Hellenistic period also floral and figural motifs. Due to the character of tuff stone, facades suffer from heavy erosion caused mainly by water and vegetation. Carved decoration as well as inscriptions are slowly vanishing. Paper examines multi-image photogrammetry as a tool for documentation, digital preservation and archaeological analysis, which is based on increased readability of worked surface, typological comparisons and other actions which allows virtual environment. Advantages, disadvantages, possibilities and limitations of multi-image photogrammetry technique used

for documenting this kind of rock art will be discussed, as well as ways of further use of acquired data in virtual reconstruction and virtual anastylosis.

S24-03 Ex-situ preservation of exposed painted rock art. Applying photogrammetry and color manipulation
Raymond Sauvage
Natural degradation of rock art sites possess a major challenge for cultural heritage management. This is especially true for exposed sites with painted art. Conservation measures are in some cases not able to fully stop or reverse continuing degradation, and we may have to accept that some sites will be lost in a near future. Preservation ex-situ in archives may be the only future for these sites. In this paper, we will explore the potential for digital photogrammetry in combination with color manipulation to replace the more traditional means of surveying localities of this type. Examples from the rock-art site at Honnhammer in Tingvoll, Møre og Romsdal County, Norway, will be presented and discussed. Here, digital photogrammetry has been applied for the past two years, as a cost-effective and accurate way to preserve three–dimensional information for the future.

24-04 Photogrammetric rock art detection: Assisting detection of rock art on lichen covered surfaces using photogrammetry and 3D modelling software
Erik Kjellman
This presentation aims to show how photogrammetry and simple 3D-modelling software techniques can aid in the detection of rock art in difficult natural conditions. The field of Rock art documentation has seen an increase in the use of digital recording methods, such as Reflectance Transformation Imaging (RTI) and digital photogrammetry. Detailed datasets means that new and novel methods for study are emerging and are making it possible to get better understanding and even making it possible to uncover previously unknown details in the rock art. In this paper, I will show how the knowledge about these methods would facilitate ad hoc primary documentation of a newly discovered rock art site in northern Norway. The author discovered the rock art site at Gamnes, Sør–Varanger municipality, Norway, during an archaeological excavation. Due to the circumstances of the discovery in connection to the excavation, it became paramount to get high quality detailed documentation of the rock carvings at a minimum of time. Photogrammetry was used to document the rock art and generated good datasets for disseminating the findings. Identifying each of the pictographs was not easy. This was mostly due to difficult lighting conditions, but also because of heavy lichen growth on the rock surfaces. Manipulating the datasets gathered from the initial photogrammetry unveiled some parts of pictographs that were otherwise almost invisible. This discovery made it possible to get even better preliminary estimates of the rock art sites extent, and thus create a better basis for further work on the site.

POSTER

S24-P1 New eyes to old graphics. Rock art in the Emirate of Sharjah
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For abstract, see S24-01.