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▶ **To cite this version:**

Marie-elise Porqueddu, Anaïs Lamesa, Claudia Sciuto. IRAAR: A project for promoting the study of rock-cut sites and quarries. 18th International Congress of Speleology - SYMPOSIUM 13 - Artificial cavities, Fédération française de spéléologie; Union Internationale de Spéléologie, Jul 2022, Savoie Mont Blanc, France. hal-03830327

HAL Id: hal-03830327
https://hal.science/hal-03830327

Submitted on 26 Oct 2022

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IRAAR: A project for promoting the study of rock-cut sites and quarries

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Abstract

IRAAR, International ReseArch group on Quarries and Rock-cut sites, is a research network launched in March 2021 during the international conference: "From quarries to rock-cut sites: Echoes of stone crafting" (https://www.mappalab.eu/en/echoes-of-stone-crafting/?fbclid=IwAR01c-yjqWrH9D48oxl_qS3mwBnR3MDYxav1-MZbjmCjwVDV9uHjad9jrVE). The group aims to promote the theoretical and methodological debate around the study of rock-cut sites and quarries in a diachronic and international perspective, bringing together specialists working on the subject. In rock-cut sites and quarries, engraved features and tool marks testify of the specific know-how related to the carving and exploitation of the rock. By documenting the tool marks on the rocky surface, we can better understand and define the set of technical skills of ancient workers. These practices reflect past and present human societies, their traditional knowledges, as well as their perceptions of the rock itself and of the underground world that we can better understand through archaeology and anthropology of techniques. IRAAR aims to encourage an interdisciplinary approach, through the promotion of dialogue and collaborations amongst researchers.

Résumé

IRAAR : Un projet pour la promotion et l'étude des cavités artificielles et des carrières. IRAAR, International ReseArch group on Quarries and Rock-cut sites, est un réseau de recherche lancé en mars 2021 lors du colloque international « From quarries to rock-cut sites: Echoes of stone crafting » (https://www.mappalab.eu/en/echoes-of-stone-crafting/?fbclid=IwAR01c-yjqWrH9D48oxl_qS3mwBnR3MDYxav1-MZbjmCjwVDV9uHjad9jrVE). L'objectif de ce réseau est la promotion des études archéologiques des cavités artificielles et des carrières dans une perspective internationale et diachronique, en mettant en relation les différents spécialistes travaillant sur ces sites et intégrant une approche technologique. Les cavités artificielles et les carrières sont le reflet des savoir-faire spécifiques liés au creusement et à l'exploitation de la roche. Ces savoir-faire sont le résultat d'un ensemble de techniques qu'il est possible d'appréhender et de définir grâce à la lecture des parois et l'étude des outils utilisés. Ces pratiques émanent des sociétés humaines passées et présentes, de leurs traditions et de leurs perceptions de la roche et du monde souterrain qu'il est possible de comprendre grâce à leurs traditions technologiques. IRAAR a donc pour but d'encourager et de promouvoir une approche scientifique interdisciplinaire en renforçant les liens entre chercheurs.

1. Introduction

Stone working has been an important task in the life of past human communities since prehistory. Humans have always been interacting with the geologic deposits in various forms, resulting in a wide range of evidence, spread all around the world. This encounter of people and rocky surfaces, crafting and materials, has produced sites such as quarries and rock-cut spaces. Working with rock calls for specific skills that reflect the environment, culture, society, and beliefs in which these human groups live, whether that is linked to the creation of artefacts, supply of building material, or the carving of rock-cut sites. Whilst material remains of this long-lasting alliance of people and geologies are still visible nowadays, their study is still somehow a niche scholarship. IRAAR: International ReseArch group on Quarries and Rock-cut sites, aims at bringing together researchers with an interest in the technical aspects of stone working and wishing to share their experience and ideas about the study of rock-cut sites and quarries. The scope of IRAAR is to foster a lively dialogue and exchange between scholars, favouring the circulation of theoretical and methodological advances.

2. A brief history of studies

For a long time, the study of rock-cut sites and quarries has only been approached from an art historical architectural or monumental point of view. Rock-hewn sites were identified as early as the 19th century, or even before, by travellers passing nearby spaces carved inside the rock (ALVAREZ 1540, TEXIER 1839, CAZALIS DE FONDOUCE 1873, RAFFRAY

1882). Early research has focused on notable features that may be documented on these sites, such as graffiti, paintings and the architectural planimetry, mainly for the purposes of typological classification and comparison. On the other hand, evidence of rock quarrying was investigated mostly when linked with the large-scale extraction of valuable stone types, used in monumental constructions (DUBOIS 1908, BRUZZA 1884). It was only during the 1970s and the 1980s that important scholarships set the pace for a new approach to the archaeological study of stone extraction, with an attention to the production process and organization of labour (WARD-PERKINS & BRYAN 1972, DWORAKOWSKA 1983, WAELKENS et al. 1992).

Since the last decades of the last century, a theoretical framework, based on the reconstruction of the chaîne opératoire intended as the sequence of actions applied for working the rocky deposits has considerably changed the approach to the study of rock-cut sites and quarries as well as the knowledge of the populations behind the creation of these carved features. In France, archaeological studies were deeply influenced by the anthropology of techniques which largely developed during the 1980's and 1990, notably because of the work of MAUSS (2012), LEROI GOURHAN (1962) and SIMONDON (2014). Several researchers have thus contributed to a better understanding of techniques, tools, work organisation and societies by tackling carving and extraction processes from the marks left on site. The works of Jean-Claude BESSAC (1986) and Peter ROCKWELL (1993) are milestones for those interested in the details of technical processes. International events, such as the International Congress of Glyptography (http://www.cirg.be/) brought together for the first time researchers working on tool marks (for instance NAGUY, (1982)). In Europe, the interest for the archaeological and anthropological information hidden in toolmarks particularly developed in the 1980s; outside Europe, and more specifically in Russia, Ûrij MOGARITCHEV (1992) tried to develop archaeological methods to study “cave building”. These pioneering works have made it possible to create references for the techniques and tools used in stone-working through the application of the technological thinking, i.e., a return to the very essence of these sites, the contact between the tool and the rock. At the heart of these studies is the documentation of the traces left on the walls and the reconstruction of the gestures made by humans. By tracing the chaîne opératoire of stone working, it is possible to understand the know-how developed and handed down by human groups of all times.

This theoretical approach to the study of rock-cut sites and quarries entails several methodological challenges: the documentation of undergrounds sites, by their very nature, present difficulties due to the lack of light and the narrowness of certain places, most often the absence of archaeological deposits makes it difficult to understand the record as well as the reuse of sites over time leading to architectural but also functional modifications. For quarries, the presence of voluminous waste piles has often been an obstacle for the access to the quarry walls and the documentation of carved traces.

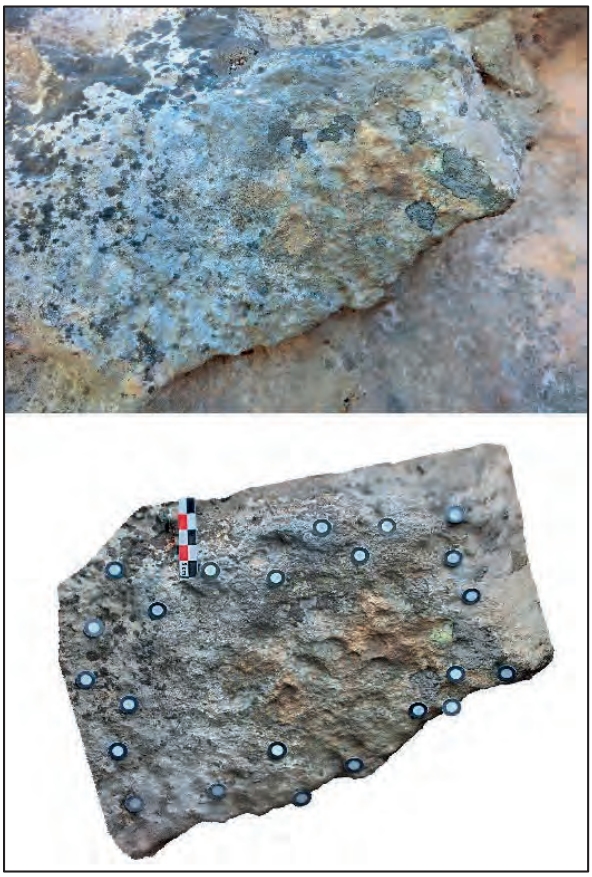


Figure 1: Detail of tools’ marks at the rock-tomb III of S’Elighe Entosu necropolis (Sardinia, Italy) and 3D documentation. Photography: M.E. Porqueddu. Elaboration: C. Caradonna.

These difficulties have prompted researchers to adopt new methods of investigation such as 3D documentation through photogrammetry and a renovated interest for ethnographic observations (Fig.1). Rock-cut sites and quarries have for several years been the subject of growing interest from researchers wishing to develop the study of techniques as well as new methods for overcoming natural hindrances. During the last 15 years, under the supervision of Marie-Elise Gardel, the international conferences of Saint-Martin-le-Vieil (France) have attracted many researchers wishing to exchange ideas on these specific aspects. The seminar series “de la carrière à la construction” coordinated by Marc Viré and Jean-Pierre Gély, from the Laboratoire de Médiévistique occidentale de Paris (Université Paris-Panthéon Sorbonne, France), is an annual series of meetings that provide an opportunity for collective reflection on the links between rock-cut sites, quarries, and human societies. The subject is also regularly represented at international conferences. This is the case of the European Association of Archaeologists meeting, were two sessions devoted to rock-cut sites were organised in 2017 and 2019 as well as the 2018 congress of the Società degli Archeologi Medievisti Italiani at Matera (Italy).

3. Rock-cut sites and quarries: an interdisciplinary and diachronic approach

Technical aspects are therefore essential to the understanding of both carved sites and the human groups who carved them. The study of rock-cut monuments and quarries is nowadays characterised by a strong interdisciplinary approach. For instance, crossing ethnoarchaeology and history helps to identify who were the actors involved in the rock-hewn worksites. Leïla NEHMÉ (2016), thanks to inscriptions painted on the Nabatean tombs at Hegra, was able to draw details of the organisation of families of stoneworkers as well as the skill degrees of each professional mentioned. Hagiographies also contain clues to identify actors as professional or amateur (LAMESA & GERVERS forthcoming). As another fundamental aspect of technological study, experimentation has emerged as an essential method for understanding techniques and gestures. Experimentation is especially developed for prehistoric periods for which, of course, the study of written documentation is not possible. Largely developed for lithic studies, with Jacques Tixier as a precursor, experimentation was then used for the study of underground mining sites, whether it be the study of the use of fire for the extraction of rocks or the analysis of the tools found by thousands in these contexts (PICKIN & TIMBERLAKE 1988, BOSTYN et al. 2007, TIMBERLAKE & CRADDOCK 2013). Experimentation, through the creation of carving tools, the study of traces present on the walls and technical gestures, is currently employed for work on mining complexes and prehistoric rock-cut tombs (PORQUEDDU 2018, CARICOLA et al. 2020). Ethnology has also largely contributed to the understanding of the techniques and especially for understanding the organisation of labour as well as approaching the cultural aspects linked to carving and extraction process (BESSAC et al. 1997). It is noteworthy to mention projects conducted in Turkey and Ethiopia where non-mechanized techniques are still used to hewn dwellings and churches (ÖZTURK 2009, GERVERS 2015).

The development of methods for carrying out quick 3D documentation of volumes through photogrammetry has represented a valuable progress for the collection of high-quality data. Moreover, the recent technological progress in portable analytical techniques has allowed the increase of in situ characterization of materials and the broadening of provenance studies to include more local or neglected stone types and their quarries (ROUBIS & SCIUTO 2019, MASCIONE & CAMPOREALE 2010, PRUNO 2018). The spread of archaeometry constituted a huge enticement for the development of quarry studies. Nevertheless, much research is based solely on the petrographic or geochemical fingerprinting for sourcing materials, without considering the detailed study of quarrying sites with their toolmarks.

4. IRAAR's objectives: the creation of an international network of researchers

The IRAAR network is therefore part of a long tradition and aims at supplying researchers with new theoretical and methodological insights for the study of these sites. IRAAR wishes to develop and enforce the perception of rock-cut sites and quarries as the results of a specific empirical and handcrafted knowledge related to stone. The aim is to go beyond the architectural monumental approach and put human groups and their relationship with rocks and the underground world at the centre of our research. By adopting a diachronic approach, from Prehistory to present days, for all non-mechanised stonework, IRAAR wants to enable researchers to create theoretical and methodological bridges between their competences but also to share their valuable experience in order to observe the transmission or the transformation of technical know-how through time.

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