

Introduction

The spectacular monuments and cities of the ancient Near East are testament to an industrial past where large-scale stone procurement remains unequalled. Yet, stone quarries are often forgotten as key archaeological sites, even though they are rich in material remains and of crucial significance if we are to understand social and technological practices of the past. Sometimes invisible, often undocumented and largely unprotected, these ancient quarry landscapes are rapidly being destroyed from pervasive human activities such as urban expansion and modern quarrying.

Despite the difficulties in having stone quarries recognised as important sites for archaeological study, the acquisition of stone for tools, monuments and constructions, or objects of art has always been an important activity throughout the history of mankind. Moreover, traces of such exploitation are literally found all over the Mediterranean region. Campaigns to acquire stone in antiquity from thousands of local, regional and distant quarries were partly statements of an elite seeking the best places to extract prestigious stone. But mostly what was sought was raw material for construction and utilitarian products acquired at a local level by people skilled in stone-working over many generations.

Quarrying in antiquity has transformed large areas of land, sometimes reaching tens and even hundreds of square kilometres, and so reshaping the natural landscape considerably. Archaeological remains such as roads, settlements, workshops, inscriptions and other material culture, directly or indirectly linked to the stone extraction, can in varying degrees comprise these extensive cultural landscapes. Yet, it is the geology that forms the backdrop of any quarry landscape, in which the distribution of exploitable rock and the morphology of the terrain define the framework that gave rise to these man-made features. The confrontation of geology and geomorphology, technologies of extracting the stone and the social organisation behind these activities creates these unique landscapes. Hence, in addition to being 'geological resources' and 'archaeological sites', the resulting areas are 'industrial landscapes' that have certain features in common.

However, despite these common foundations, ancient quarry landscapes can vary quite considerably. For example, some may be closely associated to the building of a city, as representing a key local stone resource used in its construction. In such cases, the quarries are often gradually obliterated and hidden by the expanding city itself. Here, quarrying represents a particular stage within the continuous development of the urban landscape. Other quarry landscapes display one or few campaigns of exploiting prestigious stone in remote areas. Still others may have developed over thousands of years, displaying continuous extraction from prehistory into the present. There are many factors that can contribute to the transformation of a quarry landscape, although fundamentally these are linked to the quality and desirability of the stone resource at a given time. Such aspects and the role that changing extraction technologies played in quarrying these resources was crucial in the shaping of the landscape over time.

The inspiration for the QuarryScapes project came from the necessity to put such ancient industrial/cultural landscapes on the map before it is too late. It was aimed at raising the awareness of their importance across a broad spectrum of audiences, including researchers within archaeology, geology and conservation, decision makers and heritage authorities, various stakeholders and the lay audience. QuarryScapes, being a multidisciplinary project, drew together professionals from academic and other institutions in Egypt, Jordan, Turkey, the UK, Belgium, Italy and Norway, focussing specifically on documentation, conservation and heritage management of these fragile quarry landscapes within the first collaborative and innovative project of its kind.

The QuarryScapes project partly involved research in selected case studies throughout the region. In addition, the project included more practical activities related to the implementation of research into heritage management. Thus, the project aimed at creating a 'road towards conservation' for such landscapes, from the initial recognition of ancient quarries to conservation strategies. The case studies focussed on different segments of this 'road'. Some aimed at the initial recognition of ancient quarry landscapes and linking the quarries to the use of the stone extracted through provenance studies. Others involved detailed documentation and surveying of quarry landscapes and how to interpret different quarrying activities in the light of time, space and function. Yet others aimed at finding ways of assessing the significance of quarry landscapes and their importance to our common heritage. Since many quarry landscapes are poorly documented and protected, one case study focussed on the risks and threats to such landscapes, with special emphasis on Egypt. The innovation activities within the project included a work package on the construction and implementation of a quarry landscape database for the Egyptian heritage authorities and a work package on site management planning for a particular quarry landscape.

This volume contains ten papers that reflect these multidisciplinary approaches undertaken in the QuarryScapes project and their application to the different case study areas. Outcomes from these case studies and the fresh perspectives drawn are presented as the basis not only for future research, but as the first step towards conserving this endangered cultural heritage.

In summary, these contributions cover a range of important issues, as well as providing a background to research already undertaken in the documentation of ancient quarries. For instance, *Harrell and Storemyr* give an overview of ancient Egyptian quarry landscapes, highlighting how closely related these are to monuments, ornamental and utilitarian products of antiquity. The paper summarises many years of research carried out by Harrell, supplemented with new data from QuarryScapes.

The importance of scientific approaches to the study of ancient quarry landscapes, in terms of determining stone source, extraction techniques and how these are linked to the properties of the resource, is discussed by *Heldal et al.* and *Abu-Jaber et al.* These authors present examples of geological and archaeological case studies within particular quarry landscapes, one in Egypt and one in Jordan. The former involved exploitation of gypsum (alabaster) used for making funerary vessels in ancient Egypt, whilst the latter constitutes the landscape of the building stone quarries surrounding the Roman city of Gerasa in the northern part of Jordan. *Knox et al.* present a study that indirectly results from the QuarryScapes project, explaining the use of new methods in tracing the source of the silicified sandstone used in the famous 'Colossi of Memnon', placed on the west bank of the Nile at Luxor. Provenance studies are important in linking a particular stone, that may be widely distributed, to its original source. Such studies can provide us with important insights into ancient trade routes and the social dynamics that linked quarries with other places and people.

The granite outcrops at Aswan have been exploited continuously since at least the Early Dynastic into modern times. The famous 'Unfinished Obelisk quarry' is situated in these resources and for several years the Supreme Council of Antiquities (SCA) has conducted excavations and surveys of this and other ancient quarries in the area. Within the QuarryScapes project this work concentrated on delineating important areas around Aswan with ancient quarries from several periods. As this is an area exposed to rapid urbanisation and modern granite quarrying, the importance of such investigations cannot be underestimated in providing background information necessary for balancing modern development with conservation. *Kelany et al.* present some of the main results from these surveys.

An important case study in the project was the description of the quarries used for building the ancient city of Sagalassos in Anatolia, Turkey. *Degryse et al.* present some of the main results of this study, but with special emphasis on how the quarries can be presented to tourists visiting this monumental town.

In an essay by *Storemyr*, the fate of ancient Egyptian stone quarries over the last 50 years is described. The causes of destruction and neglect of such sites are brought forward, and key questions regarding future conservation are raised, as urban growth and quarrying are expected to remain the largest threat for the ancient quarries also in the future.

A key issue within QuarryScapes was to develop a methodology that can be applied cross-culturally for describing, characterising and interpreting ancient quarry landscapes. The paper by *Heldal* suggests a method for using empirical data in the 'construction' of a quarry landscape, to establish a base for building a 'case for conservation'. A complex quarry landscape at the Aswan West Bank is used as an example.

Research on quarries and quarry landscapes is of little value unless the information obtained can be used by cultural heritage authorities to secure sustainable management of such sites. *Shawarby et al.* show how data from basic research have been compiled in national databases that are available to regional and national heritage authorities. They conclude with the belief that the project has succeeded in drawing the attention of the Egyptian administration to an important element of Egypt's cultural heritage that had previously been overlooked.

Finally, *Bloxam* addresses the problem of assessing the overall significance and value of ancient quarry landscapes by developing a methodology that can be transferred across a range of archaeological contexts. By introducing 'four concepts of landscape', she shows that it is possible to identify significance and value in several different ways, depending on the historical contexts in which the quarry landscapes are situated.

The objective of the QuarryScapes project has been to draw attention to this understudied and endangered cultural heritage as the foundation not only for future research, but as a first step towards their recognition and conservation. All contributors to the project hope that the outcomes from these case studies, as compiled in this volume, and the perspectives drawn will from an important addition to research agendas concerned with the study of ancient production sites.

Apart from this Special Publication, outcomes from the QuarryScapes project are also contained in other published journal articles, or have been accepted for publication in various professional outlets. An updated list of these will be kept on the project website at <http://www.quarryscapes.no>. Although the QuarryScapes project has officially ended, it is hoped that interest in the subject will grow and that the website will provide an avenue of communication between the project participants as well as anybody interested in the subject.

Nizar Abu-Jaber
Elizabeth G. Bloxam
Patrick Degryse
Tom Heldal