

Documenting natural stone to preserve our cultural and architectonic heritage

Architectural heritage is generally built in natural stone sourced from quarries located in the geographic vicinity, and it should be conserved over time, as it is an important element in the cultural heritage of people. A general practice in restoration is to clean, repair or even replace the damaged part of the buildings with similar rocks. However, the restoration work is not always done properly, either because the repair is poorly executed, causing further damage, or because the natural stone used for the replacement is poorly selected. The only means to deal professionally with replacement work is to determine the original stone and use it as replacement in order to avoid contrasts in the building, or if the stone has proved to be unsuitable under present conditions, to choose a suitable alternative replacement following appropriate technical assessment. This is important especially when dealing with historical towns or monuments that have been recognized as world heritage by UNESCO.

Several projects at international level have attempted to deal with documentation about ornamental stones but none has been successful over time or with results. This is why national and international networks have now been created to document all data on historical natural stone and historical quarries. Creation of databases seems to be a good tool to use in any case. CONSTRUROCK is a Spanish network involving research teams from universities, research and development institutions and natural stone related companies. Its aim is to catalogue all natural stone and quarries in Spain, focussing on both new and historical buildings. Another one is the Global Heritage Stone project, a project of a newly established IUGS Task Group whose aim is to introduce a new formal international designation for natural stone materials that have achieved widespread use as well as recognition in human culture. It also aims to formalize specific characteristics of a dimension stone in an internationally accepted context.

As a consequence of these projects, some specific and up-to-date databases will be created and maintained so experts can offer advice on the important issue of restoration of the architectural heritage based on a real situation. It will not only be a database with a commercial purpose (such as many that already exist), but one looking for maintainance and preservation of our stone-built heritage. The Global Heritage Stone project is very well known

internationally these days. Now it is our duty to make the effort to internationalize our own, national network: CONSTRUROCK.

The idea of CONSTRUROCK started in 2004, after the Spanish Geological Congress that took place in Zaragoza (Spain). Researchers from that university and from the Spanish Geological Survey discussed the lack of joined information on geological and architectonic characterization related to the architectonic heritage. They reached the conclusion that a national database was needed by geologists, architects, engineers, heritage professionals and other interested parties.

The early success of the original network led to subsequent expansion: in 2011 the network was thus set up with a national objective, but with international perspectives. At present, a total of ten institutions from ten Spanish regions are linked to CONSTRUROCK: The Spanish Geological Survey (IGME), the University of Zaragoza, the University of Granada, the Technological Institute of Ornamental Rocks and Building Materials of Extremadura (INTROMAC), the Autonomía University of Barcelona, the University of Vigo, the University of Salamanca (through the Characterization of Geomaterials Research Group), the Mining and Research Society of Castilla and León (SIEMCALSA), the Energy Board of the Basque Country (EVE) and the Spanish Council for Scientific Research (CSIC).

CONSTRUROCK is seeking:

- To list and facilitate protection for the historical quarries that were used in the construction of the Spanish Architectonic Heritage;
- To encourage and promote the importance of natural stone in the construction context, both for new building and heritage conservation and restoration;
- To develop, publicize and maintain the CONSTRUROCK database;
- To lead research projects and participate in others related to architectonic heritage and new construction.

These objectives have a common final goal: to identify, for the purpose of protection, those quarries involved in the construction of the Spanish architectonic heritage. A catalogue of the major quarries, their identification and protection status

will permit the quarrying of heritage stone resources for restoration if needed.

CONSTRUROCK will be a network at the service of professionals related to natural stone and the architectonic heritage. Currently the database has 3,629 files and is maintained by the Spanish Geological Survey (IGME). It is structured in four large independent themes, each of them subdivided in fields:

- Quarry site (with 54 fields)
- Geochemical and petrographic analysis (45 fields)
- Physical and Mechanical testing (45 fields)
- Heritage buildings (42 fields)

For the future, CONSTRUROCK should maintain, develop and manage the database both at national and international level. The network will have to participate and/or be responsible for natural stone projects related to architectonic and historical heritage as well as new buildings, seeking for national and international funding: 1) to characterize natural stone that is employed in architectonic heritage and new building; 2) to undertake in depth petrological research of the rocks to comprehend, prevent and treat pathologies affecting them; and 3) to research and locate rock bodies to be quarried for replacement in heritage restoration. The network should locate, study and catalogue the

historical quarries that were used in historical building construction and collaborate with the authorities in the design and development of protection for historic quarries.

For CONSTRUROCK it is mandatory to promote the importance of natural stone in all the constructive contexts, both for restoration and for new building. This will facilitate the Spanish Geological Survey as a National Reference Centre for Natural Stone and its application in architectonic heritage and new building, as well as the recognition of all its members in each Spanish community.

Through this editorial we want to promote the existence of this national network and the important idea of preserving our cultural and architectonic heritage through proper documentation.

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