The Granite of Pena, the Building Stone of the Most Important Buildings of the Twentieth Century in Vila Real (Northern Portugal)

David Martín Freire-Lista\textsuperscript{1,2}, Luis Sousa\textsuperscript{1,2}, and Martinho Lourenço\textsuperscript{1,2}

\textsuperscript{1}CGeo - Centro de Geociências da Universidade de Coimbra. Rua Silvino Lima. Universidade de Coimbra - Polo II. 3030-790 Coimbra, Portugal

\textsuperscript{2}UTAD - Universidade de Trás-os-Montes e Alto Douro. Quinta de Prados. 5001-801 Vila Real, Portugal

Heritage stones have been used in different civilizations; they have a great social and economic relevance that attracts cultural tourism. In addition, they have an impact on human culture, geoheritage, geoarchaeology and architecture.

Industrialisation, the development of means of transport and new materials have led to the abandonment of historical quarries necessary for the conservation of monuments. Global Heritage Stone nomination aims at the inventorying of building stones that can be used for restoration and revitalisation of villages with quarrying tradition and focuses on the sustainable conservation of cultural heritage.

The geology of Northern Portugal is broadly composed of metamorphic rocks and granites with vestiges of historical stonework, since they have been profusely used for construction. Heritage stones have created a rich cultural heritage which has been preserved up to this date.

Documentary search, cartography and petrographic characterisation are necessary to locate the historical quarries of the stones with which monuments have been built. The use of analytical techniques, such as petrography, accelerated artificial ageing, ultrasound pulse velocity measurements and spectrophotometry will guarantee the quality, durability and colour of restoration stones.

The period of most intense development of traditional stonework in the Trás-os-Montes area occurred in the 18th century. An important historical quarry of granite with medium crystal-size was discovered in Picarreira mountain, near Pena village, in the municipality of Vila Real, Portugal (41.295378, -7.816378).

There are numerous door lintels that retain the construction date carved on them, as well as houses with carved ashlars, granite pinnacles, granaries and roadside granite crosses in Pena and its surroundings. The lintels and jambs of the doors and windows of the seminary, and the court and post office buildings, all of them in Vila Real, were built with Pena granite. The petrographic and petrophysical properties of this granite have been characterised in addition to its decay in the aforementioned buildings of Vila Real.
Given the ongoing transformation of the industry, it is important that urban planners and policy makers of cultural heritage work in tandem with contemporary needs of the cities. Furthermore, planning-led heritage conservation, careful attention and common criteria for the restoration and rehabilitation of each heritage stone are needed.

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