

# THE BAROQUE MARBLE ALTARS IN SOME CHURCH OF BARI (ITALY): 3D SURVEY, CHARACTERIZATION AND PROVENANCE OF MATERIALS AND VALORISATION HYPOTHESIS

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**Abstract** – This paper focuses on the polychrome marble altars of the crypt of the St. Sabino's Cathedral and of the St. Giacomo church, both in Bari (Italy), precious evidences of use and reuse of ancient marble, combined with local materials. The study is part of a larger research project (MARMORA), related to ancient marbles used in the Cultural Heritage of Puglia, and aims to improve knowledge and preserve these works, in order to improve their valorization and enjoyment. Therefore, firstly a high definition investigation was performed, then the characterization and provenance studies of the stone materials were carried out. Preliminary results allowed to obtain a virtual and digital representation of the altars, including the whole dataset on the characterization of the materials and suggested valorization and conservation hypothesis.

**Key Words** – ancient stone, altar, Apulia, archaeometry, 3D survey.

## I. INTRODUCTION

The marble altars represent in the Apulia region a valuable evidence of the Baroque style and the testament of use of white and colored marbles both belonging to the Roman *spolia* and quarrying in following period. However, in several churches, indiscriminate actions of Baroque spoliation furniture were carried out, in order to rediscover the ancient Romanesque features, so that fine artworks of a successful period in the southern Italy were lost. For instance, in Bari historical center, the famous St. Nicola's basilica returned to its Romanesque appearances, as well as the upper part of the St. Sabino cathedral. Luckily, for an unknown reason (that could open new research prospects), in the crypt of the same cathedral and in the near St. Giacomo's church the Baroque additions, including the marble altars, were preserved. Besides, the decoration of altars of the

crypt of the St. Sabino's cathedral (Fig. 1) and the St. Giacomo church (Fig. 2) was appointed to Carlo Tucci, one of the most famous Neapolitan marble sculptor [1].



Figure 1. Altar in the crypt of the St. Sabino's cathedral, Bari



Figure 2. Altar of the St. Giacomo's church, Bari

The present paper focusses on the altars of the crypt of the St. Sabino's cathedral and the St. Giacomo's church and aims both to contribute to

the scientific knowledge about the Baroque altars of Apulia, by detailed study of employed stones, and to valorize and improve the enjoyment of these significant artworks through photogrammetric approach and three-dimensional high definition survey. Furthermore, the multidisciplinary research aspires to assess preliminary data on materials and state of deterioration of altars in order to plan restoration actions for conservation purposes. The results will contribute to MARMORA, a wider research project on the use and reuse of marbles in the Apulia Cultural Heritage, designed and promoted by PugliaMia Association. The St. Sabino's cathedral is placed in the historical center of Bari, and represents one of the most valuable monument of the Apulia Romanesque culture. Archaeological finds and paleochristian evidences prove the ancient origin of the church, dated to 5<sup>th</sup>-6<sup>th</sup> centuries AD [2]. The cathedral was built in 1034 over the prior the paleochristian structure, thanks to the Archbishop Bisanzio, and partially destroyed by Norman king William of Sicily in 1156. The reconstruction of the site was started in 1171 and the consecration in 1292. In the first half of the 18<sup>th</sup> century, because of very poor conditions of the building, the Archbishop Muzio Gaeta promoted its restoring, according to the Baroque style, and in 1738 entrusted the project to the architect Domenico Antonio Vaccaro [3]. Between 1898 and 1954, new changes in architectural trend led to damaging restoration actions, in order to eliminate Baroque embellishments and bring the church back to its original Romanesque appearance. Conversely, the crypt of the cathedral was left intact and still today presents Baroque furnishings, including the altar adorned with polychrome marbles. In front of the St. Sabino's cathedral is placed the St. Giacomo's church, which was probably built in the 11<sup>th</sup> century, although historical information is very conflicting. The first certain data date back to the 1344, when the St. Giacomo's monastery was entrusted to the Order of the Olivetan Benedictine sisters and following wills and other documents testify the prestige achievement of the site [4]. Among several renovation acts, significant was those carried out in 1729 by the architect Domenico Vaccaro.

## II. MATERIALS AND METHODS

The used method was based on the photogrammetry, a technique that allows to create a 3D model starting from simple photographs. For the purpose, huge database of images was collected *in situ* and then the processing was carried out. In particular, during the first phase, the altars were virtually divided in three horizontal areas and for each of them, several photographs were acquired, using a CANON EOS 700D camera and taking care to create overlaps to get the most detail. In the second phase, the digital collection was processed by *Agisoft Photoscan*, a user-friendly software which recognizes the *features* (overlaps) of the images, produces a *point cloud* of the object and converts this last in a 3D model.

After the digital reconstruction of the two altars and in parallel with literature search, the research focussed on the employed materials, in terms of lithological characterisation and provenance, on the stylistic descriptions and on the conservation state highlighting on the deterioration processes occurred. The classification of marbles, in terms of lithology and provenance, was obtained by comparison with the most famous and complete catalogues of Eighteenth century collections and results of previous researches [5,6].

## III. RESULTS AND DISCUSSION



Figure 3. Altar of cathedral crypt, proof of the 3D model (obtained by *Agisoft Photoscan* software)

Photographic collecting and photogrammetric approach allowed to obtain a first proof of the 3D model of altars of the cathedral crypt (Fig. 3) and of the St. Giacomo's church.

Preliminary results regarding the characterization of materials displayed the use of ancient (*spolia*) and most recent stones. Particularly, in the St. Sabino's crypt altar, a red and yellow fossiliferous limestone without Roman name, known as *Spanish Broccatello* marble (from Tortosa, Spain), the *Marmor Chalcidicum* (from the Euboea island, Greece), the *Marmor Thessalicum* (from the Thessaly region, Greece), and lastly *Yellow Siena* marble were recognized. In the St. Giacomo's church, the altar presented about the same stone varieties, together with one of the most important and expensive stone in the antiquity, the *Marmor Numidicum*, extracted in the imperial quarries of ancient *Simitthus* (Tunisia).

The survey showed that altar in the cathedral crypt displayed clear elements of restoration and marble integrations using very similar to the original materials (Fig. 4). Moreover, some deterioration effects were observed, such as chromatic alteration of white marbles, material losses and localized detachments.



Figure 4. Altar in the crypt of the St. Sabino's cathedral: detachments and losses of stone material

#### IV. CONCLUSION

The presented research represents the starting point to deepen knowledge about these artworks and could contribute to the researches on baroque altars and marble sculptor activities in the region. Therefore, the considered approach could be extended to all the altars of the Apulia churches and could be extremely useful to define and compare their typological and morphological elements, stylistic and iconographic features, employed stones, laying techniques and past

restoration measures. Moreover, the multidisciplinary study, including innovative techniques, such as the photogrammetry and the indirect survey, and the more traditional direct methods, guarantees quick collection of data and permits to merge historical and material information with the digital contents, in order to produce an original, complete and accessible database.

#### ACKNOWLEDGEMENTS

Many thanks to AgiSoft LLC, for the contribution to the research, by providing the license of the Photoscan software, used for the production of digital models. Further thanks to members of the Scientific Committee, the prof. Monica Livadiotti, Director of the Post Graduate School for Cultural Heritage and Landscape of the Polytechnic of Bari, and the prof. Pasquale Acquafredda, Coordinator of the Master degree in "Conservation and Restoration of Cultural Heritage (LMR 02)" of the Geoenvironmental and Earth Science Department of the University of Bari Aldo Moro, for their kind availability, enthusiasm, suggestions and encouragements. Many thanks to Monsignor Franco Lanzolla, Parish priest of Bari Cathedral, for his courtesy during our survey and photographic acquisition.

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