

## Knowledge and fruition of the rupestrian monument between past and present

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### Keywords

*rupestrian monument, cappadocia, integrated survey*

### ABSTRACT

*For 30 years, we conduct surveys, studies and research on the Rock Sites of Cappadocia; in last times we observe a rapid evolution of the techniques of survey and metrics data acquisition, but the aims and objectives of the research are unchanged.*

*The first our reliefs realized about 30 years ago in some Rock Sites of Cappadocia, although performed with manual techniques, are accurate and reliable; recently, were compared to those subsequently performed with techniques of laser-scanner: we do not find significant differences.*

*Although many studies and researches have been carried out recently in the Valley of Goreme, you can still find caves unpublished and unknown. In our contribution we study a small complex (two rock churches and a cave) obtained in one of the characteristic pinnacles the of Göreme Valley.*

*The three environments, churches particularly, are well preserved and are developed on different levels. The exterior, however, no longer has its original form. The limestone in which these monuments are obtained is very friable; for erosion due to natural phenomena (rain, wind, earthquakes in some cases), have occurred collapses, landslides and instability of the building; then even abandonment and neglect, have much changed the original external morphology.*

*Three years ago we performed a traditional manual relief; last year we performed a survey with the laser-scanner for a work project to test the convergence of different survey methods and data collected.*

### INTRODUCTION

The rupestrian site of the Göreme Valley (added to the list of UNESCO World Heritage site) had been studied since the time of Guillaume de Jerphanion, who, from the first decade of the past century, had compiled an analytical and reasoned census of that area.

In his works de Jerphanion<sup>3</sup> had published the first series of survey roughly measured (sometimes simple sketches) that however provided many data about the shapes and volumes of the studied buildings.

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<sup>1</sup> Text by Marcello Scalzo and manual survey and graphic restitution.

<sup>2</sup> To Claudio Giustiniani, traslate, laser scanner survey (coll. G. Tarabella) and graphic restitution.

<sup>3</sup> Guillaume de Jerphanion (1925-1942), *Les église rupestres de cappadoce*, Paul Geuthner, Paris.

During the 60's, Nicole and Michel Thierry<sup>4</sup> and than M. Restle<sup>5</sup> published two important works about the rupestrian art of Cappadocia. Both works contained numerous surveys, although they show “regularised” shapes of the monuments. In later decades other important works, as the ones of L. Rodley<sup>6</sup>, S. Kostof<sup>7</sup> e C. Jolivet-Levy<sup>8</sup>, through surveys and drawings, help the reading and understanding of the buildings.

During the '80s we have started studying and surveying a few churches. Unfortunately, we had published a small part of the collected data.<sup>9</sup> Already at that time we considered the survey like a fundamental instrument for a correct method and approach to study architectures, rupestrian or not. Initially, we made use of manual techniques, then of integrated survey, but our approach to the study of rupestrian buildings have never changed in 40 years<sup>10</sup>.

### THE STUDIED COMPLEX

In the summer of 2013 we travelled to Cappadocia to conduct a survey campaign connected to PRIN 2011. During an inspection performed in the surroundings of the Göreme Open Air Museum, we had the opportunity to discover an unreleased rupestrian complex composed by two small churches and a large room, completely carved in a typical “fairy chimney”, called by local people “Peri bacalan”.

Nowadays the studied complex can be reached through a steep slope. At the end of the path, in a small flat area, are located the entrances to the first church and to the adjacent room, now in use as occasional home and morphologically modified, changing the original shape.

The biggest church of the complex, has a trapezoidal plan (440 cm the entrance side, 365 cm the apse side, 500 cm the SW side and 332 the last) with two cap apses SE orientated<sup>11</sup> and decorated by “horse shoes” niches with double ring on all the walls. The room presents a low barrel vault set on the long sides. There are not frescos; the only decoration is a red, monochrome strip decorated as “dente di lupo” at the set level of the vault. Nowadays the highest chapel, is almost inaccessible, although it's not to far from the small square; the external morphological modifications of the complex made the access very difficult<sup>12</sup>. The church present a squared plan (170 cm entrance side, 168 cm apse side, 151 cm the NE side and 135 the SW side) whit a cap apse (partially ruined) SE oriented in line with the entrance. On the other walls there are three arch. The elevation is interesting: four triangular connections link the squared plan to a circular ring. On it it's setted a tambour with four low relief half columns joined by low arch supporting a little dome.

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<sup>4</sup> Nicole & Michael Thierry (1963), *Nouvelles églises rupestres de Cappadoce*, Klincksieck, Paris.

<sup>5</sup> Marcell Restle (1967), *Die byzantinische Wandmalerei in Kleinasien*, Bongers, Recklinghausen.

<sup>6</sup> Lyn Rodley (1985), *Cave Monasteries of Byzantine Cappadocia*, University Press, Cambridge.

<sup>7</sup> Spiro Kostof (1989), *Caves of God. Cappadocia and its churches*, Paperbacks, Oxford.

<sup>8</sup> Catherine Jolivet-Levy (1991), *Les Églises byzantines de Cappadoce. Le programme iconographique de l'abside et de ses abords*, CNRS-Editions, Paris.

<sup>9</sup> Marcello Scalzo (2001), *L'Iconostasi nelle chiese rupestri in area mediterranea*, in AA. VV. *Le città del Mediterraneo* (Atti del Convegno), Reggio Calabria.

<sup>10</sup> Marcello Scalzo (2002), *Sul rilievo di architetture rupestri*, Ed. Scorpione, Firenze-Massafrà.

<sup>11</sup> Georgios Dimitrokallis (1976), *Οι δίκογχοι χριστιανικοί ναοί (Le chiese cristiane a due absidi)*, Athenai. In the author opinion, are funerary buildings, dated, between Xth. (*Yusuf Koç kilisesi* in Cappadocia) and XIVth. monolithic monastic churches of St. George and St. John the Baptist in Armenia; whit some sporadic episodes in Russia and Armenia. In our case, through convincing comparison with two-apses rupestrian churches from Cappadocia and Puglia, the dating defined between XI th. and half of XII th. century.

<sup>12</sup> Nowadays the access to the church is possible thanks to the availability and courtesy of Ali Bay, the owner, that we thank.

Inside the church there are some frescos dated between XI and XII centuries<sup>13</sup>. An unnamed Saint (probably a soldier) is painted on the entrance lunette; on the right side there is painted a prayerful Saint; on the upper arch a soldier Saint is represented; on the walls beside the apse there are pictured two Bishop Saints. On the left side wall, on the higher arch, there is painted a diptych with a saint on horseback (probably St. George) and another very similar to the saint represented above the entrance. A Deësis (a blessing Christ between the Virgin and Joannes the Baptist) and Archangel Michael are pictured on the two parts of the tambour. Unfortunately, we could not make an essay on the floor of the two chapels to verify trace of tombs, that the owner of the complex vaguely remembered.

## METHODS

We wanted to compare the collected data, especially the planimetric asset of the churches, with the "manual" survey done the previous year. We established an almost perfect overlay of the papers. Our goal was that of comparing the results of a traditional survey with a high resolution digital survey. We wanted to give an evaluation on the capability to respond to the needs that a survey operation requests. The main aspect we have to consider is the capability to give a characterization of the artefact, both from the physical, material and structural point of view and from the general context.

It is also important to satisfy the various necessities that the different purposes of the survey can request. Moreover we have to consider the objective needs related to the ease of data collecting and elaboration, the simplicity of data management and interaction with other survey methods and different investigation scale.

Moreover, especially in the field of cultural heritage, a cost-benefit evaluation is very important, both from the economic and the timing point of view. Indeed, during the first year, in the summer of 2013 we realized the first direct survey with common instruments (laser meter, level etc.)<sup>14</sup>.

We continued with a photo-video documentation, realizing a series of panoramic views of the churches, also of the interior. The purpose of this second step was the realisation of a virtual tour and film clips. With the collected data we realized a reconstruction of the structure that was presented in 2014 during a conference on typologies of hypogeal architectures<sup>15</sup>.

The following year, September 2014, we realized an integrated digital survey<sup>16</sup> with the scope of creating 3D documents, with particular care to surface modelling techniques, which is the best approach to obtain digital models that faithfully represent the shape and peculiarity of rupestrian sites, difficult to represent with traditional techniques. Using the data of the survey, realized with a 3D laser scanner (active optical system) we compared different dedicated software to interpolate points to obtain meshes and projection of photographic images on the 3d model, to carry out a faithful digital representation.

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<sup>13</sup> The dating of the frescos doesn't necessary correspond to the dating of the building; often the pictorial endowment was painted long after the excavation of the church. In our case we can prudently date the lower church between the X and XI century and between the XI and XII century the other one.

<sup>14</sup> UNIFI research group of PRIN 2011 that operate for the documentation of the monument in 2013, add to the writing, also participate Claudio Giustiniani and Berna Aydın.

<sup>15</sup> Marcello Scalzo, *Chiese rupestri di Cappadocia: alcune considerazioni su esempi "minori"*, in Convegno "I paesaggi del sottosuolo – geologici, archeologici, minerari e delle acque", proceed. of the confer. now being printed.

<sup>16</sup> In group of search UNIFI for PRIN 2011 in the summer 2014 they worked in the rupestrian site, with me, the colleagues of the University of Florence: C. Crescenzi, F. Tioli, C. Giustiniani, B. Aydın, G. Tarabella.

## CONCLUSIONS

During the last years, in the field of monument surveys, we are watching a significant loss of interest for manual survey, while it is paid major attention to the survey carried out using digital techniques as the only reliable product for the study of cultural heritage. It cannot be denied that only the manual survey allows to a direct contact with the artefact and only the physicality of this method allows to a complete and exhaustive knowledge of the monument. The graphic transcription on paper, using the traditional two-dimensional representation, although, is conditioned by an abstraction operation compared to the real perception of the object.

The traditional method, otherwise, remains an essential and necessary instrument, when the survey became an instrument for the knowledge and the analysis of the monument. Certainly we cannot deny the benefits of contemporary methods and systems of data collection. Both in survey field (laser scanner, GIS, etc.) and in documentation sector (virtual tour, drone shooting) all these techniques are fundamental, especially in a period where the “spectacularization” of any operation is requested, also in the field of study, protection and communication of cultural heritage.

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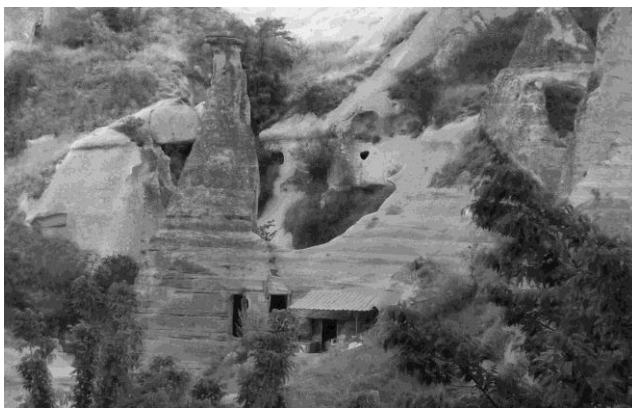


Figure 1. Complex anonymous in Göreme Valley.

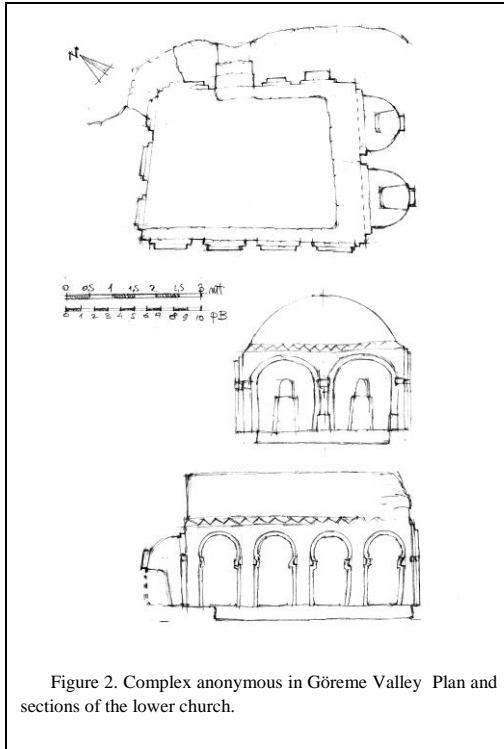


Figure 2. Complex anonymous in Göreme Valley Plan and sections of the lower church.

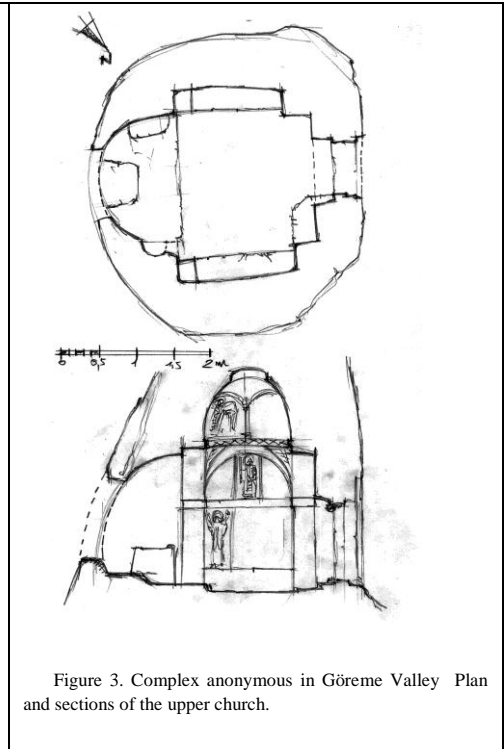


Figure 3. Complex anonymous in Göreme Valley Plan and sections of the upper church.

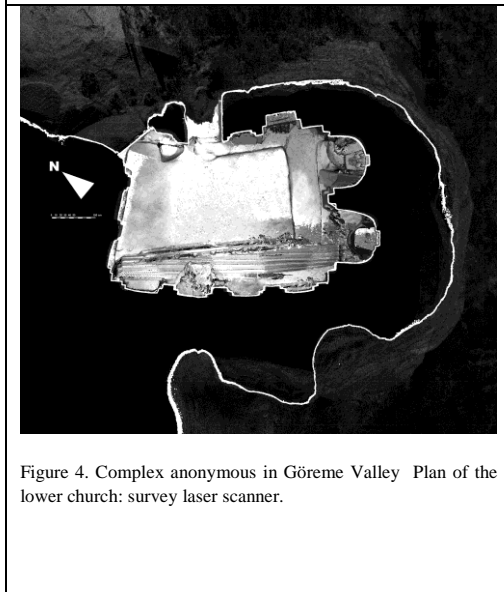


Figure 4. Complex anonymous in Göreme Valley Plan of the lower church: survey laser scanner.

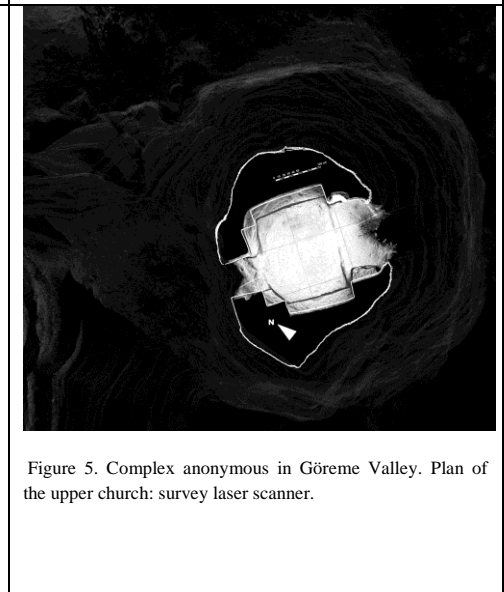


Figure 5. Complex anonymous in Göreme Valley. Plan of the upper church: survey laser scanner.



Figure 6. Complex anonymous in Göreme Valley. Section of the two church: survey with laser scanner.

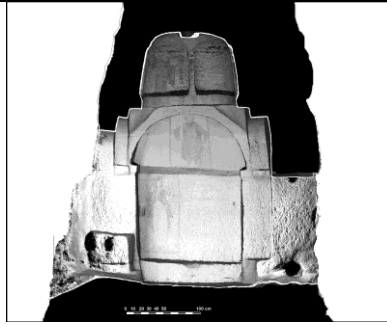


Figure 7. Complex anonymous in Göreme Valley. Section of the upper church: survey with laser scanner.

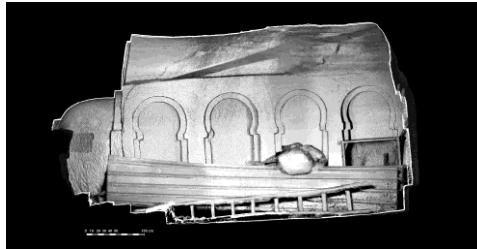


Figure 8. Complex anonymous in Göreme Valley. Section of the lower church: survey with laser scanner.



Figure 9. Anonymous complex in the valley of Göreme. Panorama: to left the pinnacle with the complex object of study. In the background at the center Tokali Kilise.