

### Abstract

Numerous ravines characterize the Murgia territory, extending from Puglia to Basilicata. In that of Saint Mark, in Massafra, in the village of Santa Marina, we find the House of the Igumeno, a residential building with unusual architectural features. The graphic documentation, unpublished, supports the previous archaeological annotations and helps to highlight some episodes. The 2014 geomatics documentation was produced within the framework of PRIN 2010/13 and is the only documentation of the 3D model. Given the current inaccessibility of the places, it is the only document that allows the knowledge and promotion of the building to be preserved in question and the village to which it belongs.

The building is part of the more extensive survey on the landscape of the hamlet of Santa Marina and Saint Marc, a site investigated in the Crhima-cinp European project. We have extracted the data from the three-dimensional data to guarantee a complete and detailed description of the village in question and the ravine leading historical and artistic monuments.

**Keywords:** Igumen rupestrian house, geomatics documentation, archaeologic survey.

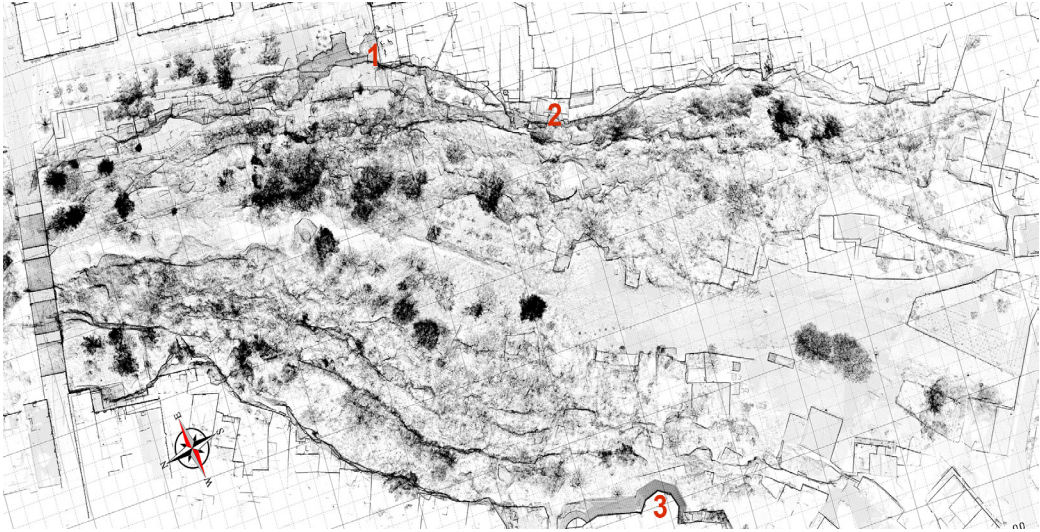


Fig.1  
Saint Marc ravine.  
The Saint Marina  
hamlet. 1 Saint  
Marina Church,  
2 Igumen House,  
3 Castle X-XVIII, 4  
Garibaldi bridge.  
Riegl Point clouds.  
(By Francesco Tioli).

opposite page  
Fig.2  
The hamlet cliff:  
spatial nexus  
between the Saint  
Marine Church  
(1) and Igumen  
House (2). Riegl  
Point clouds. (by  
Francesco Tioli).

## 1. Introduction

Broad and deep crevices with steep walls characterize the Apulian-Lucan plateau. In these regions, the calcarenites, excavated for millennia by water, have welcomed into their bowels entire villages from the Paleolithic to the 17<sup>th</sup> century and in some territories, continuously until the 1950s. With the Provisions for eliminating unhealthy dwellings, Law 640/1954, the cave dwellings and their villages were abandoned.

However, the solicited cultural attention for the Rupestrian Habitat heritage, which highlighted the city of Matera, the capital of European Culture in 2019, as its leading exponent, has supported the promotion and enhancement operations for the cave living structural-environmental recovery. The appreciation of some complex buildings is underway in the Matera area and, sporadically, in some Apulian cities.

On the last southern offshoots that descend in steps towards the Gulf of Taranto, in the theatre centre of the Murgia, is Massafra. Numerous ravines furrow its territory, mainly in a north-south direction. These houses the rupestrian settlements<sup>1</sup>: aggregations of more or less deep rooms; sometimes, complex sites, line up along the terraces or rough paths that characterize the valleys' steep slopes.

<sup>1</sup> The excavation type characterises buildings and urban structures; they can be distinguished in natural cavities, rock shelters, rupestrian, and underground towns.



“A hard daring and out-of-the-ordinary scenario, with peaks and holes, with a green’ hundred shades and a hundred caves... Like a fossil animal, a fossil is this carved rock, but so parsimoniously that, to climb to the crypts, there will be no steps, but treads in the stone, exact and breathless treads, which allow you to keep vertical, much more than the steps. They are so natural that you can climb without realizing it: you lift your foot, and it comes in on its own, like a slipper” (Brandi, pp. 110-11)<sup>2</sup>.

Among the ravines of this territory, there is that of Saint Mark (Fig. 1), which divides the urban centre in half. It was inhabited until the seventeenth century: in November 1603 and January 1608, great water overflowed and made the hamlets dangerous. (Jacovelli, 1983; Dal Miglio, Desiderio, 2019) Following these events, the population abandoned the sites, which were used, over time, for quarrying and saltpetre production. Its cliffs are home to meaningful rock structures. Among these, we find the ‘*Igumen house*’ (Fig. 2).

The architectural dignity links the building to the *Igumen* Anselm presence, Head of a Greek Church monastic community, who, as the legend of Margheritella narrates, seems to have resided in the Saint Marc ravine<sup>3</sup> (Fig. 1) (Gallo, 1916).

<sup>2</sup> Over time, this happy walk was lost due to neglect. In 2021, it was no longer possible to access, for example, the ‘home of the *igumen*’; walls of blackberries obstructed the paths. From the village of Santa Marina you can visit, with a guide, only the area set up as an archaeological park.

<sup>3</sup> Around the year one thousand, a certain Magician, Gregùro, would have lived in the Madonna Della Scala ravine with his daughter, the sorceress Margheritella, or Magarella. Captured by a Greek Catapano, she was handed over to some inhabitants of the area, who intended to burn her alive. From the Gravina di San Marco, the *hegumen* Anselm intervenes to help her, and the innocent Margheritella is freed and saved. The legend is linked to the local toponymy

pagina a fronte  
Fig. 3  
Santa Marina  
Church.  
Longitudinal  
section through the  
left apse. On the  
wall and pilaster,  
we see three Santa  
Marinas; still, in the  
bema we see traces  
of the Pantocrator's  
great fresco. Point  
clouds (by author).

opposite page  
Fig. 4  
1 - Plan Igumen  
House.  
2 - Entrance detail.  
Faro Point clouds  
(by author).

How much truth there is in the tale is hard to confirm; however, how the archaeological data interacts with the oral tradition data cannot be ignored.

The *Igumen* house is inserted in a medieval context dated to a period before the 11<sup>th</sup> century: the village of Santa Marina (Figg. 2-3). This religious building dates to the 7<sup>th</sup>-8<sup>th</sup> century due to the '*logette*' tombs in the area in front of the church and the dedication inscription in the central apse. This inscription for the diachrony of the diffusion of the *Consuetudo Bononiensis*, dating with incoming and outgoing days of the month, which is attested starting from the 5<sup>th</sup>-6<sup>th</sup> century (Caprara, 2015) would confirm the dating also supported by the accessory rock structures concerning the worship hall, fovea/cistern and possible monastic cells.

## 2. On the *Igumen* House annotations<sup>4</sup>

From the literature<sup>5</sup>, the *Igumen* House is a nucleus of two hypogeums located in the upper part on the southeastern slope of the ravine of Saint Mark (Figg. 1-2), on the southwestern edge of the archaeological park of the rock settlement of the village and church of Santa Marina, of which it belongs as part. Other cavities are located on the lower levels: quarrying and collecting saltpetre has significantly compromised their integrity. On the right, towards the ravine valley outlet, shortly after the *Igumen* House, we find only a tiny nucleus of hypogea around the rock church of San Biagio<sup>6</sup>, which the flood of 1603 strongly compromised.

The collapses, which have happened over time, have compromised the ravine front urban and architectural organization reading and that of the individual buildings. We can reach the house from the bottom of the ravine (Dalmiglio, Desiderio, 2019) and, with great difficulty, the way to the archaeological area. The nucleus is marked with the number 18 in the project *Le Grotte Parlanti* and has two units, sub 1 and sub 2. Following the

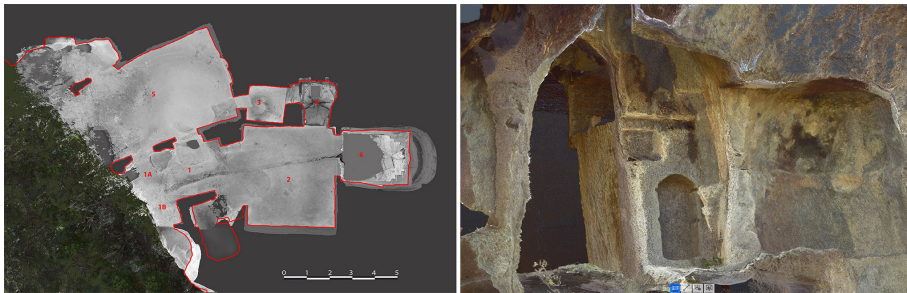
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with the toponyms Grotta di Mago Greguro, Uschiferri, Corno Della Strega and Seguita Cristi, and finally, the "house of the *Igumeno*". Although evocative, the toponymical correspondences between material and immaterial sources can conceal some truths. The legend is handed, down in a 1916, historical essay by Gallo V. The scholar traces the documentary references of a Latin manuscript; the witch puts the date around the year one thousand.

<sup>4</sup> Monument co-ordinate: 40.586636, 17.112406.

<sup>5</sup> An accurate and detailed description of the evolutionary phases of the building is due to Dal Miglio and Desiderio, 2019: pp. 221-252, who, like myself, were motivated to study by Roberto Caprara. Already in 2001, he complained of the absence of a detailed study of this unique system of hypogea (Caprara 2001: 92). Of the House of the *Igumen* there were then only brief descriptions in Jacovelli 1960: p. 27; Abatangelo 1966: 189-190; Jacovelli 1981: pp. 25-26 to which was added a summary treatment in Castronovi 2005: pp. 37-42.

<sup>6</sup> From Jacovelli brief description, we know that the rock church of St Blaise "is close to the Saint Mark ravine, immediately after the *Igumen* House. It has three small naves with flat vaults, with arches supported by pillars and flat walls" the annotation of "an artefact in calcarenite which vaguely hints at a mullioned window is fascinating. It is in a room "obscured by the presence of a large boulder that remained embedded in the floor following the last landslide of 1936".



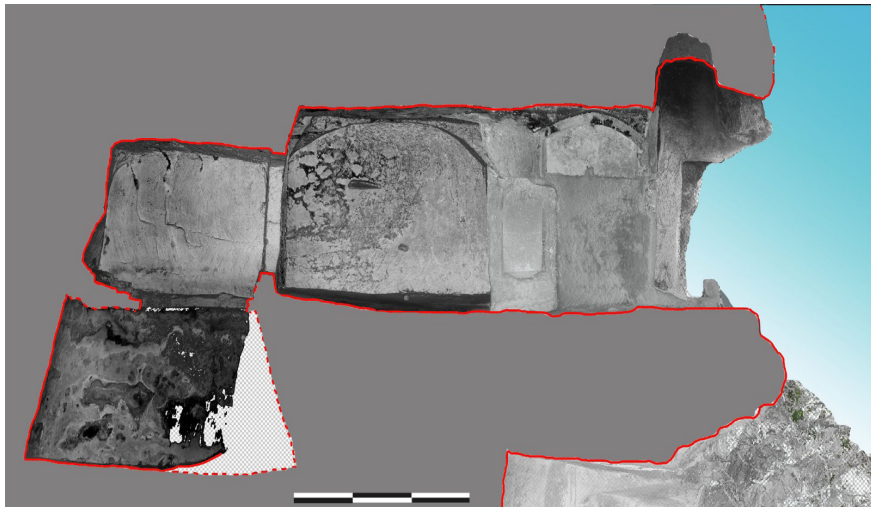
numbering of Dalmiglio and Desiderio, sub 1 is made up of rooms 1-4, 6 and 7, while sub 2 from room 5. We will divide room 1 into three parts: 1-1A-1B (Fig. 4). On the elevation of sub 1, looking to the right, we find five steps, a quarter of a spiral, dug into the bottom of a probable small silo. The staircase leads onto a small bumpy floor (1B), laterally to the antechamber (1A) and at a higher level. This space has undergone considerable alterations.

We point out a corbel with a residual arch attachment in the corner of the sidewalls. This could be a prelude to a small *arcosolium*, which has been lost, with an accurate sculpture atypical for Massafra. On the southeast wall, we find a rock cabinet (1b) with recesses for shelves. There is a rectangular recess on the cabinet with a longer extension, perhaps a housing for a closing beam. Furthermore, there are traces of an arch, which separated the antechamber from the *arcosolium* and the vaulted room (Fig. 4.2).

The original arrangement of sub 1 consisted of the small quadrangular room (1A) with a lowered barrel vault, and of which traces remain, and the room (1) with a lowered cross



Fig.5  
Iguenen House.  
Section SO. Room 1  
and 2; tank niches  
6. Point clouds (by  
author).



opposite page

Fig. 6

Iguenen House:

a- Section SE

room 2;

b - arcossolium

corner corbel, room

1B. Point clouds (by  
author).

vault<sup>7</sup>. On the western wall of the latter, there is a large rectangular niche (1a) with a segmental arch punctuated by a central square pillar preserved in the stone material. Behind the post, a recess of the exact dimensions of the niche has been created.

On the same west wall, the trace of the ancient floor can be reconstructed through the marks left by the excavation tools. The walking surface was at the height of 125 cm higher than the current one (Fig. 5). On the eastern wall, on the external front, we find a stairway (S1) which climbed straight up, of which a few steps remain in the lower section and interrupt on void due to a series of rocky detachments<sup>8</sup>. In a subsequent phase, with the communication between rooms 1A and 1B, a rectangular well, now plugged up, once connected to the plateau above was opened on their roof. In the thickness of its external wall, there is a small window splayed towards the inside, today preserved only in its upper portion. The window light was about 50 cm outside and 90 cm on the side. In its architrave, we find a further opening with a vertical trend<sup>9</sup>.

<sup>7</sup> The vault has a rampant impost on the east wall, towards the sixth of the cross vault. Dalmiglio and Desiderio believe that the solution follows the flight of stairs that has been lost. However, we could also hypothesize that the solution was functional for the lighting of compartment 1, excavated afterwards from compartment 1, or that it was thus modelled in the remodelling for the reception of the well.

<sup>8</sup> It is uncertain that the S1 staircase belongs to the first phase and that the higher steps were lost with the subsequent floor level lowering. On this wall, we find a niche for oil lamps immediately behind the external wall, flush with the arrival of the steps, and a second one, slightly lower down, immediately after the transept shutter. This is not reported in the archaeological report. Therefore, both could be reached by raising the hand only from the original floor level.

<sup>9</sup> Assuming that the wall and the window were contemporary with room 1 (Dalmiglio and Desiderio, 2019: 224), we should think of a ventilation system as we find in some underground structures on the island of Santorini (Crescenzi 2012). We usually find these systems in cave buildings consisting of several rooms excavated in sequence in the depth of the rock. This solution requires a ventilation and lighting system.



On the northeast wall, doors 1G (f4) and 1H (f5), opened in successive stages, connect rooms 1 and 1A with room 5 respectively. Two pilasters, of which only the NE one remains, departed room 1 from the next room 2<sup>10</sup>. This room was smaller than the current one in height and transversal extension. On its back wall, excavations traces indicate that the southwestern wall was enlarged in stages; different processes characterize the ceiling attachment and the northwest edge. In the first phase, the roof had a lowered cross configuration; the edges hints can be seen at the start of the northeast pilaster and the beginning of the northwest small wall.

### 3. Notes on the survey and elaboration data <sup>11</sup>

During the 2014 campaign, in the context of the PRIN 2010/13\_2023/2015 and 2021, the UniFI RU documented the Village of S. Marina by integrating the LIDAR data of the valley with the architectural ones.

The alignment and composition of the numerous scans made it possible to reconstruct the archaeological park's existing structures fully. Its virtual model allows the interdisciplinary

This would suggest that there were at least two other rooms initially.

<sup>10</sup> The pilaster and part of the nearby wall may have been demolished to remodel and accommodate the space for accessory 7.

<sup>11</sup> Acknowledgement. The work was carried out within the: PRIN (2010-2011), (2013-2015), directed by Disbec - UniTUS, chief Andaloro M., and supported the UR – DIDA's one, chief Crescenzi C., is to document the Rupestrian Cultural Heritage, a fragile heritage intended to dissolution. Survey 2014. Landscape survey: C. Crescenzi, Da Frassini L., Masotto G., Scalzo M, Tioli F., Giustiniani C.

Seminary Cultural Rupestrian Heritage in the European Area, chief Crescenzi C.. DIDA-UniFI; Archaeological Park St. Marina, survey 2020-21: Baldacci A. Crescenzi C., Balducci F. Quadrelli L., Nicoli L., Valeria Sellitto.

The municipality of Massafra and the Tourist Office supported the work. The active participation of the Jacovelli E. Archaeogroup Association and the Mastrangelo C cultural and logistic contribution made the activity in the area easier and possible.

opposite page  
Fig. 7  
Igumen House. NE  
section: room 5;  
tank niches 3 and 6.

reading of the area, the individual units and their undercurrent relationships.

The researchers documented the terraces ravine landscape south of the Garibaldi Bridge as an urban structure. The valley's complex morphology required using a Riegel VZ 400 long-range scanner. The drafting of a single environmental model, consisting of 26 scans of the area and over 130 scans performed for the architecture of the Village of Santa Marina archaeological park and the *Igumen* House nucleus, conducted by Faro phase variation scanners Focus 3D, required an accurate post-processing work for their alignment and aggregation.

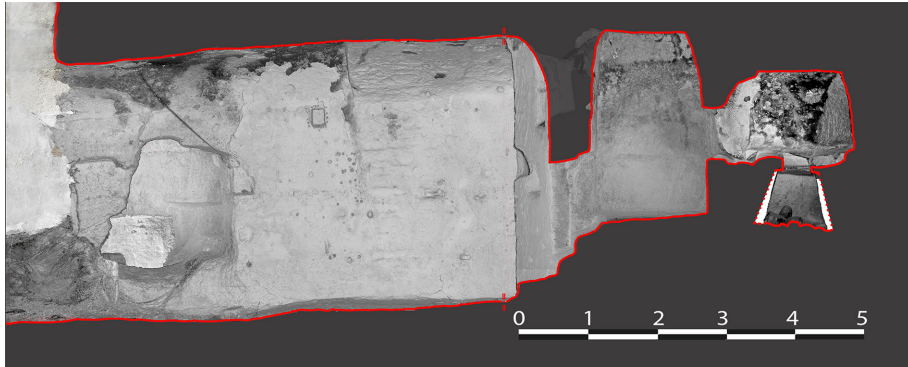
This strategic data integration, choice of 3D scanner tools, digital modelling, cataloguing and investigation of these architectures was deemed essential to address a systematic study to document a cultural heritage that is disappearing and changing along with its habitat. The degradation caused by anthropic pressures, centenary abandonment of sites and natural causes threaten and change this environment.

The landscape digital data processing constitutes a three-dimensional map, a relational geographic database of the on-site documentation campaigns and the interdisciplinary studies still in progress.

The nature of rocky settlements makes the data management produced by the laser scanner particularly difficult. The roughness and extreme irregularity of the articulated surfaces, the collapse of the fronts and the luxuriant vegetation prevent data acquisition in some areas. Furthermore, the limited time available for the execution of the various operations has required continuous scans. Therefore, acquisitions without uniformity of light exposure have produced the juxtaposition of well-lit images with others with poor or excessive lighting. Initially, we grouped the clouds by macro areas, aligned and recorded them with the Recap PRO program, manually identifying the homologous natural points (points identifiable on the rock itself). We have cleaned the documentation projects of the Archaeological Park and the *Igumen* house from the noise disturbing elements, silhouettes of people, burnt or out-of-control points on the edges of the cuts, moved vegetation, etc. The accuracy of the operations and the cleaning of the clean points has returned an accurate virtual three-dimensional model, which allows observing in detail the various signs on the walls, such as chippings and lesions, in addition to the paintings in the Church of Santa Marina.

From the 3D model, we have taken out the traditional 2D representations for the plans drafting, the elevations and sections, axonometric and perspective views. Having identified the section planes for each image to be carried out, very high-resolution snapshots were created to preserve the details of the surfaces; the operation was repe-





ated for each scan file involved in the processing, and each was performed several times with less defined pixilation to obtain a homogeneous coloring of the image. The final drawing, processed in Photoshop, merges the snapshots after controlling the exposure and, in some cases, makes shadows, contrast range, and brightness to get a homogeneous result.

#### 4. Conclusions

The report reopens the comparison of the *Igumen* House chronological interpretation. The further in-depth analysis would be needed for entrance areas and the silo niches' architectural elements<sup>12</sup>. The data survey, open to researchers, will bring new vitality to the study and interpretation of this habitat. Furthermore, the 3D scanner survey confirms its effectiveness as a good tool for data analysis and reflection over time and the possible synergy of integration between surveys conducted in different periods and with other acquisition data techniques and instruments, and as a support for the redevelopment and enhancement of the area.

<sup>12</sup> The typology present in this building is not widespread in Massafra, and I have not found it even in the archaeological area of Vitozza in Sorano. However, they are present in the archaeological site of Göreme (Benucci et al., 2017) and Santorini. Even the typology of the front of the arched caves, not included in this report, which insists on the front of this ravine glacis, is unconventional. This typology, with the wall front in cut stone, is always present in Santorini. These elements could consolidate the Greek Orthodox community's thesis in the Santa Marina village.

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