The ancient rupestral site of Fornello is one of the most compelling and historically important sites in the Murgia region of Puglia, Italy. The presence of dozens of rock hewn caves, the evidence of a 3rd century BC settlement together with the remanent structure of an 18th century livestock farm, all situated in a unique, geographic location, represent an historical model demonstrative of the sustainable living practices utilized at the time and how intimately bound those practices were to the dictates of the land, climate and region. One of the caves with Byzantine frescoes comprised of three layers that date to 1100, 1200, and 1350, suggests the presence of an *esicasterion* - the primordial form of monastery - and documents a link and period in history when Byzantine communities emigrating from the Balkans were establishing themselves in the rupestral settlements of Puglia. The aggregate of these fortuitous circumstances is an historical site of special significance demanding proper preservation, research and analysis to gather unique, historical data. However, the site has been in a state of abandon for over a century.
Mission

Through the crucial process of restoring and preserving the Byzantine frescoes, the rural architecture, the cave dwellings and the historical landscape, Messors’ ultimate aim is to realize Fornello as a living, historical site. By utilizing the practices that were already in place by its original inhabitants, it will serve as a vital model of conservation and sustainable living. Any supplemental energy or infrastructure needs will be derived from renewable resources and technology. The location will be used as a place for milk collection, cheese, olive oil and wine storage. Shepherds will be offered the site as a place for their cheese production and its ageing, as was done traditionally in the caves.

The location also offers a place for congregation. It will help in supporting, promoting and celebrating the local agro-pastoral community, their history and the resulting heritage of their food culture, born out of its intrinsic relationship to the distinct characteristics of the land. The site will be an animate place of learning and research, offering unique opportunities for hands-on activities such as restoration practices, archaeological research, cheese making, experimental horticulture for ancient crops and plants conservation. Workshops and lectures will be available on topics such as food anthropology and biodiversity as related to food production. Drawing knowledge, wisdom and inspiration from converging fields of expertise and interests both local and international, Fornello will exist as a dynamic organ of community, connecting past with present, exempling a historical approach to environmentally sound living.
Call for partnership

The Fornello Sustainable Preservation Project is open to collaboration with organizations, institutions, universities, foundations, professionals, groups and individuals interested in developing and undertaking actions, studies, research, fieldwork programs and sponsorships in the following areas of the project:

- Cultural landscape preservation.
- Fresco conservation and restoration.
- Application of diagnostic technology and studies.
- Byzantine Iconography studies.
- Archaeological survey and investigation.
- Rural architecture studies and restoration.
- Food anthropology.
- Renewable energy supplies
- Experimental horticulture. Ancient crops/plants conservation.
- Historical migration.
- Restoration fieldworks.

As the preservation project of the site of Fornello is at its early stage, preliminary interventions is needed as a start-up for a long term study/work program for the recovery of the site and its use purposes:

- Stabilizing and protective measures to secure the entrances of the caves and the shepherd house.
- Preliminary exams on the condition of the Byzantine frescoes to use as a departure point for a long term restoration plan.
- Involving and educating the local shepherds community to ensure their understanding and commitment to long-term site preservation
The rupestral settlement of Fornello, which is located about 4 km from the town of Altamura in the province of Bari and region of Puglia, Italy, can be reached from the Altamura-Santeramo road. The settlement is dug along the slopes of a barren hill made of calcareous tufa. The Cava Pontrelli, an extraordinary paleontological site preserving thousands of dinosaur footprints dating back to the Cretaceous period is a mere 500 meters away.

The particular geography of the Fornello site, which is situated between rocky hills and the fertile matine (agricultural fields) in the valley, has contributed to the evolution of the settlement. The hilly environment, typical of this region, complimented the raising and grazing of livestock and various forms of agriculture, including grain production. The caves availed locations for a range of social and religious activities.

Fornello still features sheep herding facilities and courtyards divided by dry stone walls and the original road that crosses the site linked to three ancient tratturi (ancient communal herding paths used for transhumance). The site presents a compelling archaeological area rich in artifacts for investigation. As an example, fragments of pottery have been found on the surface dating from the 3rd century BC to the Middle Ages. Additionally, about 25 artificial caves have been excavated in the bedrock.
An 18th century *masseria* (farmhouse) occupies the summit of the hill. Nearby, on the other side of the road, there is a solid building of the same period of construction as the farm, probably with the function of barn/dairy house.

This site represents a trove of artifacts with a wide span of historical timeframes, worthy of survey and investigation.
The site of Fornello is located on the *Murgia* plateau, an extensive limestone formation that occupies the central part of the Puglia region. The entire plateau is crossed by 2 types of erosive furrows. The first type, called *gravine*, has steep or vertical walls. The second type, as seen at the site of Fornello, is called *lame* and is elongated with the appearance of wide valleys. The bottom of the *lame* is occupied by alluvial soil fertile enough for cultivation. The rocky slopes are intended for pasture. There are no surface rivers because the subsoil is very fractured and permeable to rainwater. Only during heavy rainfall are temporary streams created which then disperse in a few hours.

Two types of rock are characteristic of the territory of the *murge* and both affect the subsoil in the Fornello site: Altamura Limestone and Gravina Calcarenite.

Altamura Limestone is a stratified rock formation from the Upper Cretaceous, belonging to the group of limestone of the *Murgia*. It is solid, resistant and ranges in color from light gray to dark gray, though it may sometimes be covered with the reddish patina of oxidation. There is an abundance of fossils to be found within, though often in fragments. The most peculiar fossils of this formation are the rudists, which can sometimes be quite large in size.

Gravina Calcarenite, on the other hand, was formed in the relatively more recent Middle Upper Pliocene - Lower Pleistocene. It lies atop the underlying Altamura Limestone. It is usually not stratified, ranges in color from white to yellowish, is a soft rock with high porosity and is also rich in fossil content. The Gravina Calcarenite is commonly known by the term *tufa*. The ease with which tufa can be carved, allowing the hewing of caves in the bedrock, has facilitated the spread of the "rupestrian phenomenon" in the Fornello site as in other sites nearby.
Recovery of the site

The recovery program will take place through workshops that will involve international participants and institutions taking part in sessions of fieldwork, research and lessons.

Caves, courtyards and shepherd's house

Work sessions will be used for 2 main purposes. First, for cleaning rubble and debris that has accumulated from neglect over the years. Second, to stabilize and secure the entrances and skylights.

Next, it will be necessary to create 3D diagrams of the entire site, including surface profiles of the caves. Geo-electrical surveillance will be conducted in order to trace the existence of any concealed cisterns or cavities. The original system of rainwater collection will be restored so that it may be used for both the hygienic facilities required for use of the site and for gardening purposes.

Since the infiltration of rainwater is the major cause of deterioration to the caves and frescoes, an important part of the restoration process will be waterproofing the site. These operations consist of removing the topsoil overlying the caves until reaching the bedrock and then insulating them with bentonite. After the waterproofing measures and the redirection of the water, the topsoil will be put back to restore the natural appearance of the surfaces. This phase of excavation will be carried out using archaeological techniques under the direction and supervision of archaeologists in order to document any findings that may result in the removal of the soil.

Even the dry stone walls that surround portions of the site and the courtyards will be the subject of survey, study and restoration.

As for the shepherd's house, the restoration of the roof, the water collection system, the original limestone slab floor, and the doors and windows will be carried out. Additionally, we will install a lighting system and restore the fireplace, which will be used for cheese-making demonstrations in the summer season and as a heating source in the winter season.
The fresco composition is difficult to interpret in its entirety, due to the strong degradation and decay. These conditions, though they have increased in recent times due to abandonment, seem to have been persistent over time, even at the time of the frescoes' origin and original inhabitation of the site, due to sulfation and efflorescence phenomena generated by the continuous infiltration of rainwater into the tufa bedrock. These decaying conditions would have led to the commission, in at least three different periods, of decorative fresco editions with the probable intent of covering, or in their minds restoring, the gaps and the non-aesthetic effects of the previous layers. This is found in several places, especially in the apse where it's possible to distinguish the layers and different decorative elements of the various iconographic editions. Aside from the physical distinction of the layers there is also a noticeable addition, perhaps a change or perhaps a simultaneous evolution, in the use of language in the fragments of inscriptions found. In fact, in addition to the layer that reveals the inscription in Latin, " MEMENTO DOMINE FAMVLO TVO..." (OH LORD, REMEMBER YOUR SERVANT...), another layer contains a fragment of inscription in Greek characters that have not yet been deciphered.

Preliminary work will be carried out for the recovery of any detached fragments of fresco and the reinforcement of parts in danger of falling.

At this stage, photographic documentation of the entire surface of the cave, including the frescoes, through RTI photography, laser scanning and photogrammetry will provide the basis of study for subsequent periods of restoration.

Also, work will be carried out in order to remove bio-deteriogen agents such as calcified deposits, moss and lichen.

The overlapping of three layers of fresco presents an interesting conservation challenge. Appropriate methods may be used to allow for the detachment and restoration of each new edition of fresco layer. They can then be placed on separate movable surfaces, adjacent to the original wall-crypt allowing for a distinct iconographic reading of each layer.
The studies on Sant'Angelo in Fornello

The historical studies conducted so far on the crypt and its fresco paintings are based mostly on observation, given the lack of historical documents.

• E. BERTAUX, *L'art dans l'Italie méridionale, de la fin de l'Empire romaine à la conquête de Charles d'Anjou*, Paris 1904
• A. PRANDI, *Aggiornamneto all'opera di Emile Bertaux*, Roma 1978
• A. MEDEA, *Gli affreschi delle cripte eremitiche pougliesi*, Roma 1939
• A. PRANDI, *Aspetti archeologici dell'eremitismo in Puglia*, in *L'Eremitismo in Occidente nei secoli XI e XII*, Milano 1945
• V. TIRELLI, *La Universitas hominum Altamurae dalla sua costituzione alla morte di Roberto d'Angiò*, in Archivio storico Pugliese, 9, 1956
• F.M. PONZETTI, *Cripte ed eremi medievali di Altamura*, in *Japigia*, XII, 1941
• N. LAVERMICOCCA, *Gli insediamenti rupestri di Altamura II. Il Casale e la chiesa di Sant'Angelo in Fornello*, in Altamura/A.B.M.C. n. 17-18, 1975-76

However, these studies are an excellent starting point for more detailed research, supplemented by technologically supported analyses, which will be put in place in the upcoming conservation and recovery project.
The cave-church was probably topped by an open air masonry church in its original form. This no longer exists but, it is mentioned in both the "Atti della sacra visita" ("Notes of the Sacred Visit") by the Archpriest Francesco Russo in 1440 and in the records of the Holy Visits from 1491, 1497 and 1530. In the area there would have been a large farmhouse surrounded by caves, a well or fountain and, the cohesive centre of the rural community, the cave-church. In the masseria regia (royal farm) of Fornello, which was in the feudal possession of Sparano da Bari in the 13th century and later sold to the miles (soldier) Giovanni Scoto, one can trace the presence of one of the many casali (country buildings) of the agro-urban area of Altamura consisting of: Belmonte, Jesce, Pisciulo, Casal Sabini, Carpentino, Curtaniello, and others.

The main activity in the area, as in most of the masserie regie, appears to have been the keeping of livestock, as attested by some archival documents at the Basilica of St. Nicholas of Bari.

We can know with some certainty that this cave village was used this way because of how other, comparable villages were laid out in Byzantine Puglia. These components of church and farm were a common aggregate in the rural population at that time. This model of village appears to be the most suitable setting in the historical and geographical context of the agro-urban area of Altamura, which includes the Ecclesia Baptisimalis (Baptismal Church) of Belmonte (7th -8th cent.) and other rural chapels, even if there isn't any documentation relating to life of the village in the Byzantine period thus far.

There is a large cave on the site marked by niches, in the form of consecutive cells that open towards its axis. These cells assume the appearance of a series of pointed arches, and appear to have been the dormitories of a community of monks.

Niches of the same type are also present in caves of other rupestrian settlements in the Altamura area, e.g. Carpentino. The presence of the dormitory marks the decisive step in the evolution of ascetic life from the esicasterion (ascetic dwelling), to that of the associative form and function of a large monastery, or perhaps a lavra due to the resemblance with the rupestrian monasteries of the Near East.
The frescoed cave-church is one of the most particular examples not only in the area of Altamura, but also in the province of Bari, as well as in the context of the entire Puglia region. The particularity of its geological structure is revealed in the vertical cross-section of the walls’ appearance, showing a clear superimposition of the sedimentary tufo on top of what could be defined as a thin layer of scattered angular stones of medium size, spread almost regularly over the layer of the hard limestone at the bottom. The special orientation of the church, in the context of the rupestral ensemble, together with its remarkable spatial division make it one of the most refined examples of its type, worth to become subject of further scientific research. Some authors record it as a „basilian crypt”, pointing out that the church belonged to a monastic community of Eastern Christian Orthodox monks which lived after the monastic code of rules developed in the fourth century by Saint Basil the Great, Bishop from Capadoccia.

The medieval use of the cave is certified by carving marks and particularly by multiple layers of painted plaster, distributed on several of the cave’s architectural elements, suggesting the use of the cave as a church and as a crypt for several centuries. We have arguments to attribute the chapel to a Greek Orthodox community, as both, iconography and one of the most probable original inscriptions underline it clear. Historical sources record Fornello as a Greek village in 1292, calling it “Pecia de la Greca”; we also find out that the agricultural area of Altamura has been around that period of time under property of the San Nicola Basilica in Bari. The name of the crypt has been recorded as controversial, balancing between the dedication of the church to either Saint Archangel (Michael) or Saint Nicholas (Archbishop of Myra, whose relics are preserved in the Bari “San Nicola” Basilica).

The past two editions of the Fornello project have revealed the plan of the cave church ensemble as well as a veracious perception over the number of pictorial layers on each wall.
Some descriptive elements for this ecclesiastic space would make: the semicircular apse carving in the Altar area, two suggestive remanent sections of a low cancellum as part of a former rudimentary early iconostasis, several niches of various shapes and depths, as also few carved arches in some passage areas between communicating spaces and a more or less flat ceiling.

To be recorded are several interventions from later periods which have damaged the painting through utilitarian carving of some niches and the random cutting-out of a few blocks of tufa from the painted areas. The length of the space is considerable, that is why the direction of the nave follows the original length of the cave, sacrificing the traditional Eastern orientation of the church in favour of using the maximum available potential of the rupestral ensemble, according to the functional benefit of the community. Although the orientation of this church is towards North, a Light has been carved out on the Eastern wall’s ceiling, permitting the directed light to stream through the window and descend over the Holy Altar Table at the appropriate moment of the Morning-Liturgy. The frescoed church corresponds to the single nave type, having an Altar, an iconostasis and a naos, although a space between two frescoed pillars could possible create the suggestion for what could be a narthex, a hypothesis which is not necessary supported by the coherence of the iconographic program. We can only accept the iconostasis as a spatial bordering unit between the Altar and the naos. A secondary chapel could have been located on the eastern part, as we find an entrance from the naos area leading to a second architectural unit with suggestive ecclesiastic shaping, but without any traces of painting; this could be either a Diakonikon or a Prothesis. The floor of the main church is uneven and is randomly covered with various sizes of stone blocks, soot, organic matter and earth, probably presenting at this moment a different level of height, as comparing it to the initial phase of the cave’s functional status as a Liturgical space. Two empty loculi were found to be carved in the naos’ floor, attesting the presence of former Christian graves. The current status of the floor points out evidence showing that the cave was more recently used as shelter for domestic animals.
The present appearance of the painting is as that of a palimpsest, due to the discontinuity of the pictorial layers, which appear as fragmentary, showing of extent random losses reflected both on the original and on the superimposed layers of lime plaster. A major inconvenient points out to be the conservation issue developed by the degrading action of water, biodeterioration and the osmosis phenomenon; a great volume of various salts recrystallisation on top of the painted plaster layers obscure major pictorial details and acts as a visual barrier on the global perception of the viewer over the ensemble. Regarding the maximum number of superimposed layers we distinguish three different layers of plaster in the apse composition depicting the original traditional Deesis scene, where all the three layers point out to depict the same composition, with variations in proportion of the figures and different morphologic elements. We recognize Byzantine elements in composition, iconography, spatial syntax, morphology and style. The first layer is particularly a linear Byzantine style that could fit to the XII century’s sense of accuracy and sharpness of the Comnenian stylistic, while the latest layer of painted plaster shows a slightly volumetric suggestion, using pink tones for flash colour and being less accurate in precision of the descriptive outlines of the shapes. The latest layer shows rather early Gothic characteristics in style, in the spirit of the XIV c. The intermediate layer could be dated probably around the XIII c. There has been found evidence to point out that the flat ceiling of the altar area had been painted simultaneous with the first attempt to decorate the Altar apse, as we also believe about the two figures of the Archangel and Archdeacon which frame the central composition of the apse on either sides of the northern wall. Here, analogies with similar churches occur. The iconographic program of the Altar is emphasizing the Eucharistical theme and manages to create a perfect dialogue between the Liturgical content of the text and the spatial syntax of the cave. Scenes showing the Pentecost, full figure portraits of the Apostles and some Holy Hierarchs are included there to support the central theme.
Other representations in the naos are the Enthroned Theotokos with a donor and a Greek commemorative inscription, full figures of identified Martyrs and a complex narrative composition in an advanced state of degradation. The eastern wall of the naos depicts a votive scene oriented towards the Altar leaving only recognizable a full representation of a portrait showing a crowned figure offering a particular model of a church-tabernacle to the Holy Theotokos and Virgin Mary holding the Christ Child. The identity of the crowned personed has been discussed by some art historians, but remains uncertain and still subject of debate. In the present we have an evidence of the number of layers on each depicted scene and we purpose to further extend this research. Currently our research is focused on mapping the mural painting and assigning the details to the different stages of execution, between XII-XIII and XIV century, with the focus of developing a coherent strategy for the conservation and restoration of the church and preserving the site.

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