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Vernacular architecture on archaeological remains. Conservation and enhancement of the "Villa San Limato" in Cellole

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Topic: T4.2. Materials and interventions techniques for vernacular architecture

Abstract
The paper aims to analyze a case of vernacular architecture in Cellole (Italy) built on the roman maritime villa of Sofonio Tigellino, prefect under the Emperor Nero. 'Villa San Limato', built in the eighteenth century, includes a roman cryptoporticus and some thermal rooms of the original roman villa. The roman walls, the ancient mosaics and the marmoreal rests of San Limato were accidentally found in 1954, during agricultural works. Only in 1971 the roman villa was fully excavated by Werner Johannowsky. The roman villa of 'San Limato' is a rare example of suburban roman villa with private baths, included in a much larger archaeological area on the edge of the ancient Roman colony of Sinuessa (296 a.C. – V century). The ruins of Sinuessa are still visible on the seacoast of Mons Massicus and, underwater, off the coast of Mondragone. The 'Masseria San Limato' is an interesting case study because it testifies the coexistence between archaeological remains and rural architecture. The rural farm have been developed often re-using the archeological rests, as foundations for the new buildings or employing archaeological materials inside the building. The 'Masseria San Limato', which is largerly in a state of disuse and abandonment, is not yet fully known and constitute an important example of local built heritage for the values of construction tradition, materials and techniques that they preserve. The study is characterized by an interdisciplinary approach. It will illustrate the characteristic values of an emblematic vernacular architecture and his state of conservation analyzed with respect to the structural instability and degradation in order to identify guidelines for the conservation, enhancement and the storytelling, at the same time, of the rural and archeological heritage.

Keywords: *archeology; vernacular architecture; conservation; Sinuessa.*

1. Introduction

This article follows some older studies concerning the restoration and fruition enhancement of Villa San Limato in Cellole (Italy). Villa San Limato is an interesting case study in the field of built, vernacular heritage, as it embodies the coexistence of the rests of a Roman maritime villa (that probably belonged to the prefect Sofonio Tigellino) with the surviving structures of a farmhouse (that was built on the rests of the Villa in the eighteenth century) (Fig. 1).

Fig. 1. The rests of the Villa San Limato with the surviving structures of a farmhouse (Source: Cappelli, 2021)

Today the archeological remains of the Roman Villa and the architectural ruins of the rural building are in state of abandonment and degradation, therefore it is very difficult to distinguish and read the different layers.

The current state of the Villa represents the last phase of a process, during which the two architectural manufacts were built, overlapped, and degraded, always depending on the environmental and cultural conditions.

The coexistence of the archeological dimension and the architectural component of the site requires a multidisciplinary and multiscale approach. The main aim is to preserve, understand, maintain, and share the ancient pre-existence. There are several problematics to deal with, especially regarding the structure and materials' conservation, the accessibility and use of the site.

The uniqueness of the materials and the traditional technics of construction of both the vernacular architecture and the archeological remains that lay underneath require a history-aware restoration work.

2. The Roman villa of San Limato: from the understanding to the valorization of the archeological remains

The maritime villa of San Limato was built north from the Roman colony named Sinuessa, along the low, sandy area, that is typical of the north coasts of the Campania region. The villa represents a certain social and cultural category, as it is geographically placed in an area, where there was a heavy concentration of luxury houses during the imperial era, in line with the near south coasts of Lazio. It is probable that the amoenitas locorum of these places was essential for the Roman aristocracy, who decided to build so many villas, that the coastline "looked like a city" as Strabone said (Strabone, 1988).

The villa has a thermal plant, which is the only testimony of the Roman period, and it is the only villa that has been excavated on the Domitian coast area. The current state of the site does not allow to fully understand the original appearance of the villa, that must have had an important architectural plant and rich decorations, as testified by several important sculptures, that were found during some agricultural works in 1954 and are now kept in the National Museum of Naples.

According to the historians' most likely hypothesis, the Roman villa of San Limato was built in the first century, during the Julian-Claudian age. At this time, the typological, morphological, and functional evolution of the villae maritimae had already established a precise style and clear political and social intentions.

Up until that moment, maritime houses were considered as normal architectonic complexes, linked to few typological categories, and characterized by different features, mainly determined by the fantasy of the architects and by the needs and economic sources of the commissioners (Mansuelli, 1958; Mansuelli, 1961).

The villas were considered in two different ways, they were "productive", maritime houses but also houses built for the *otium*, as places to rest (Lafon, 2001; Gros, 2001). Either way, both were characterized by a perfect coexistence between natural environment and architectonic building.

Several archeological studies of the many coast houses from the Imperial age highlighted how at some point the original inhabited nucleus, centered around an atrium and a tablinum, becomes richer and richer of new spaces, such as oeci, exedra, peristyles, and nymphs, sumptuously decorated with statues, mosaics and frescoes. These additions came with different planimetric configurations and are not traceable to a unique type. In fact, every villa offers its own solution, determined by the environmental situation and by the needs of the highly hierarchic Roman society.

The data emerging from the archeological research and the interpretations of the planimetries allow to identify the presence of certain architectonic forms, useful to human amusement and to state a clear social condition. The plants of the maritime houses are characterized by rooms where the power was wielded and that

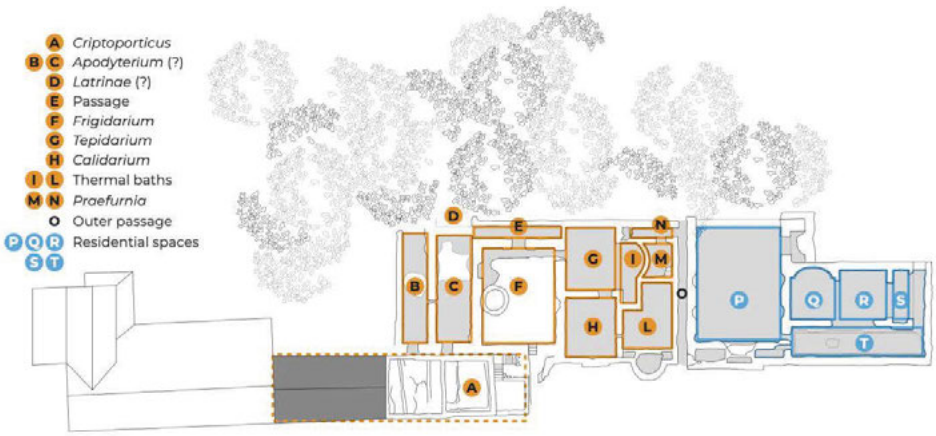

Fig. 2. General graphic elaboration of Villa San Limato's plan: the area of the private baths (orange) and the residential area (blue) (Cappelli, 2021)

symbolized the public dimension (like the thermal plants), creating a transposition of the urban building model into the private sphere.

Therefore, the maritime villas gradually evolved into the forms of living and became a place of social self-representation. Their luxurious architecture and fine furnishings increased "a key phenomenon of the reception of Hellenistic culture by the Roman upper-class» (Zanker, 2012).

In the case of San Limato, the planimetric position of the remains, which are parallel to the coastline, demonstrates the original scenic dimension of the building, most certainly reminiscent of the typological development of the maritime villas during the Neronian and Flavian age. There was the tendency to emphasize the fruition of the external areas, saw as the background of wellness activities and otium. This emphasis was created through a planimetry based on curved profiles of apses and exedras, open on the green and towards the sea.

Such configuration was complemented by luxury furniture and architectonic decorations, that enriched the terraces and the arches, highlighting the outlines and geometrical lines. All these features increased the quality of the wellness experience and the representativity of all the spaces and the whole house.

The remains of Villa San Limato that are currently visible, are on two levels: the lower one includes a cryptoporticus with a wall perimeter in a fine workmanship mixed style, that supported the noble floor. The upper level is composed by several spaces, that were partially excavated in 1971, during an excavation coordinated by W. Johannowsky (Johannowsky, 1975).

The results of the excavation, carried out in the Seventies, does not allow a precise reconstruction of the planimetry of the villa. The graphic rendering is rather rough (Fig. 2), and it is hard to figure out how people used to enter the villa and live its spaces. What is clear is that there are two distinct buildings, that were probably built in different moments and are separated by a 1,20 m wide corridor [O]. The first nucleus of spaces is the most north-western and was most certainly a balneum. The second one is placed on the southeast corner and has a far more residential outlook (Cascella, 2017).

In the side facing northwest, the cryptoporticus is near to the areas [B] and [C], that probably correspond to the ancient apodyterium. Besides the presence of some service rooms [D, E], it is possible to identify the thermal spaces, with the frigidarium [F], the tepidarium [G] and the calidarium [H]. The frigidarium, a pool for the cold bath, is characterized by some remains of the apsidal and

and the "emptied" space was then reused as a deposit or cistern (Fiengo, 1998; Fiengo, 2008). This practice was so rooted and common and the dense network of caves under the city was so widespread that in 1781, aware of the potential danger, King Ferdinand IV issued an edict to forbid digging within inhabited areas and along public roads (Sottosuolo di Napoli, 1967). Its good petrophysical and mechanical characteristics. This is the reason of its easy workability, closely related to the heterogeneous composition, for the description of which we refer to specific scientific contributions (De Gennaro, 2013). This feature determines its lightness, malleability to cutting tools and chisels, but also its porosity and volumetric response to thermal changes. Over the centuries tuff has been mostly used as a structural material, plastered on both sides, but sometimes, in buildings of particular significance, the stone was selected and cut with special care in order to be left exposed. The cases like these are few and mostly date back to the Angevin period which have left us majestic architectures both religious and civil (Santa Chiara Church, San Giovanni a Carbonara Church, the Castle of Sant'Elmo, Castle Nuovo, to name a few). The diffusion of piperno in the Aragonese period, a gray volcanic stone much more resistant than tuff, has led to the progressive abandonment of the exposed tuff in monumental architecture in favour of piperno facades, like Palazzo Gravina, Palazzo Sanseverino or the Church of Monteoliveto, and later on to plaster, used to create neat surfaces or painted in order to imitate other building materials like marble or clay (Fiengo, Guerriero, 1998).

1.1. Forms of degradation and intervention issues

Because of its heterogeneous composition, tuff stone is exposed to various forms of degradation, both natural and anthropogenic. Most of them have been indexed through a standardised lexicon (first NorMaL 1/88, now UNI 11182/2006) that has thus provided a shared nomenclature of the most common forms of deterioration. In the case of historical buildings and especially for the stones preserved *facciavista* (fair-faced), most degradation phenomena are caused by the decohesion of the composing elements (the separation of cements, of single crystals, of pumice) due to the deposit of acid substances in the atmosphere resulting from pollution, often associated with complex thermohygrometric conditions, and by the formation of efflorescence and biodeterogenic phenomena.

The study is based on the work of the authors on numerous Neapolitan conservation works on historical buildings dating back to a very long period of time, from the Greek age until the nineteenth century, characterised by the use of tuff both as a building stone and as a finishing and decorative element. It has provided the authors the opportunity to monitorate and compare the most common forms of degradation and, considering the issues of architectural conservation, to choose the most appropriate conservative practices and methodologies in each case. Of course, the types of degradation change radically depending firstly on the quality of the stone, and secondly on whether tuff is protected or not by *arriccio*, plaster or fine stuff. With regard to conservation status, the challenges that often arise for the operators are basically related to these fundamental themes: sustainability of the removal operations and the delay of the biodeterogenic processes; cortical and depth consolidation of the stone; integration of small and large gaps; final protection of the surfaces, especially in relation to the masonry and the building aesthetic. For this reason the age and the use of the buildings are fundamental.

2. Case studies

2.1 Case 1: the remains of a Roman villa in Marianella. Tuff as *reticulatum*

2.1.1 The site and conservation issues

The remains known as the "villa of Marianella" originally belonged to a farm dating from the I century A.D. and frequented until the early Middle Ages (*L'insediamento agricolo* 1987).

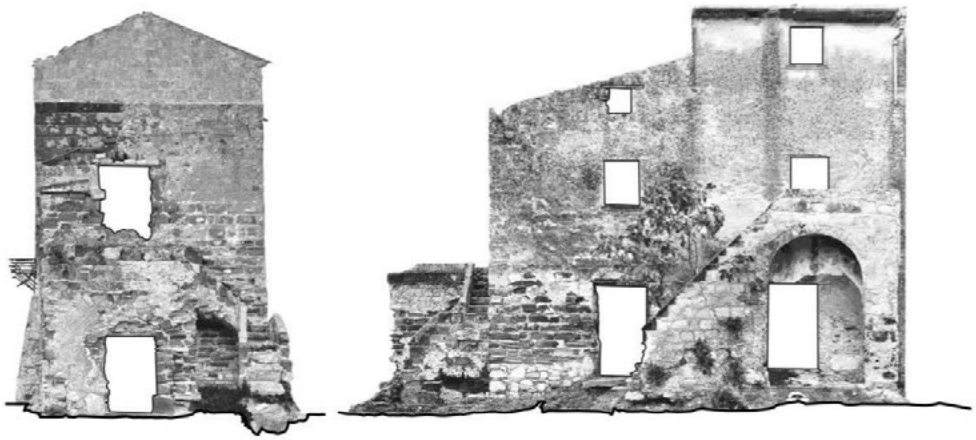

Fig. 5. The analysis of the materials and of the traditional techniques of the farmhouse (Cappelli, 2021)

3. The 18th century farmhouse. The restoration of a rural architecture on Roman remains

As already said, in the XVIII century the farmhouse was built on the cryptoporticus, that supported the rooms of the Roman villa. The building of the rural house on the rests of Villa San Limato went along with the potentiality of the surrounding natural environment.

On one hand, the Roman villa was built in this place for its view and with beauty-curative purposes, on the other the farmhouse reinterpreted the typological character of the Roman villa, answering to the rural needs. For example, the cryptoporticus was used as a cellar.

It is important to study and preserve the Roman rests of the Villa, as they testify the Roman way of living and local culture. The ruins of the farmhouse represent the last part of a building complex, which is made of another portion of private building, on which the vernacular structures of the 18th century were built. The farmhouse is basically developed on three buildings and on three levels, that rise on the cellar, converted from the Roman cryptoporticus.

The higher buildings, one covered with a gabled roof and the other with an orthogonal pitch, have a double entrance on the ground floor. These structures are what is left of the living center of the farmhouse, as there is the kitchen on the ground floor and two other rooms on the first floor, that were probably bedrooms. The two isolated rooms of the first floor are accessible through two external stairs, which rise above the north-east and south-east sides. The stair on the short side was built against an additional building, that had only one floor and only one entrance, intended for external use and equipped with a hob. This building has a flat covering, that functioned as the terrace of one of the rooms on the first floor.

The analysis of the materials of the farmhouse (Fig. 5) demonstrates the use of traditional techniques and materials. Starting from the materials, it may be interesting to understand the different steps during which the building was made and then modified as needed.

Due to lack of maintenance and to a long period of abandonment, the 18th century structures of the farmhouse and those of the Roman age (except the mosaic paving, recently restored) show

different signs of instability and degradation. In particular, the constant exposition to the aerosol creates many conservative criticalities.

The study of the building techniques and the interpretation of the crack pattern of the farmhouse shows different kinds of instability: holes in the masonry shell (due to the absence of covering and to the collapse of the ceilings), signs of erosion on the walls, gaps in the masonry, due to collapses of the structure and old materials. What is left of the traditional wood ceiling are only a few chestnut wood beams with circular section, now rotted.

The architectonic surfaces show several signs of degradation, regarding the tuff, that is both yellow and grey, porous, and fragile. Due to years of exposure to atmospheric agents, the tuff developed different kind of erosion, surface deposits and efflorescence. The limestone blocks, that make up the foundation, show signs of erosion, chromatic alteration, and biological patina. There is an important presence of weeds, with shrubs of fig that cause the disintegration of some portion of the internal and external walls. It is important to face the structural problems and the degradation of the materials with carefully considered actions, that could satisfy the current needs of statical and functional adaptation but also respect the traditional techniques and the characteristics of vernacular architecture.
It is possible to use more modern techniques, materials and technologies or redesign some architectonic solutions, making the building more comfortable bot always ensuring the presence of the traditional peculiarities of the rural heritage. The roof with pitches, the traditional wood ceiling, the external stairs, the direct paths to the external court and the natural surrounding are fundamental values to preserve (Fig. 6-7-8). In addition, there are many criticalities regarding the fruition of the site. The archeological complex is rather peripherical in its municipal area, as it is built in the extreme south of Baia Felice, next to the beach. How to reach the site is one of the first problems to solve.

Currently, Villa San Limato is hidden by several buildings that do not allow to see the site and the archeological ruins from the road that leads to them.

Such urban disorder (Fig. 9) does not allow to see the archeological evidence, that are rather incomprehensible, although several attempts to communicate them through didactic signs (now old and ruined) and a tourist InfoPoint (always closed).

Fig. 6. The ancient kitchen of the farmhouse with holes for fire (Cappelli, 2021)

Fig. 7. The ancient access to the farmhouse below the staircase leading to the first floor (Cappelli, 2021)

Fig. 8. The wooden beams of the ancient floor of the farmhouse (Cappelli, 2021)

Fig. 9. The entrance of the archaeological site: urban disorder does not allow to see Villa San Limato (Cappelli, 2021)

The shape of the site does not allow an easy understanding, therefore there is the need of project interventions, able to differentiate the Roman rests and the structures of the farmhouse, but also to point out their direct connection.

The analysis of the building techniques and of the historical materials of the two houses is essential to elaborate a correct approach for the conservation of the ancient remains.

The environment surrounding the Roman villa and therefore the farmhouse makes this conservation very difficult. Apart from the fact that this area is abandoned most part of the year, the sight and recognition of the buildings has got worse, due to structural and cultural barriers.
Most of the people who live in this area do not know the archeological site or are not able to understand it.

The valorization of the site must consider the restoration of the farmhouse as a way to attract more people in this area. Recomposing the historical configuration of the farmhouse, thinking of new ways to revitalize the agricultural dimension of the villa and to enjoy beautiful sight, it is possible to increase the attractiveness of the site. The farmhouse could also become the background of cultural activities and events, through the addition of a working InfoPoint, a small museum with all the sculptures found during the excavation of the villa, service rooms with useful tools and equipment.

Lastly, the management of the site is an issue to consider, as the economy of Cellole depends primarily to the third sector and is mainly linked to the tourism on the coast. There is the need to identify a cultural association or a local company that could take care of the site and manage it, through the partnership of the Cultural Heritage and all the modalities required by law. The near accommodation facilities could be part of the promotion of the site, for example running activities ranging from food and wine appreciation to historical tours.

4. Conclusions

The complexity of the palimpsest that unites the archeological remains of the Roman villa of San Limato and the architectonic ruin of the rural building requires a conscious restoration project, that should consider both the rests at the same time, as testimonies of two different heritage but united by the same evolutional process and destiny (Fig. 10).

The restoration represents the main solution to reactivate the memory of this site and to transmit its values to the future generations. After the study of the building techniques and the historical materials and after the analysis of the traditional use of the different archeological and architectonic structures, it is possible to preserve and deliver them to the future generations. They will be able to understand their meaning only through well-thought architectonic interventions and an effective storytelling.

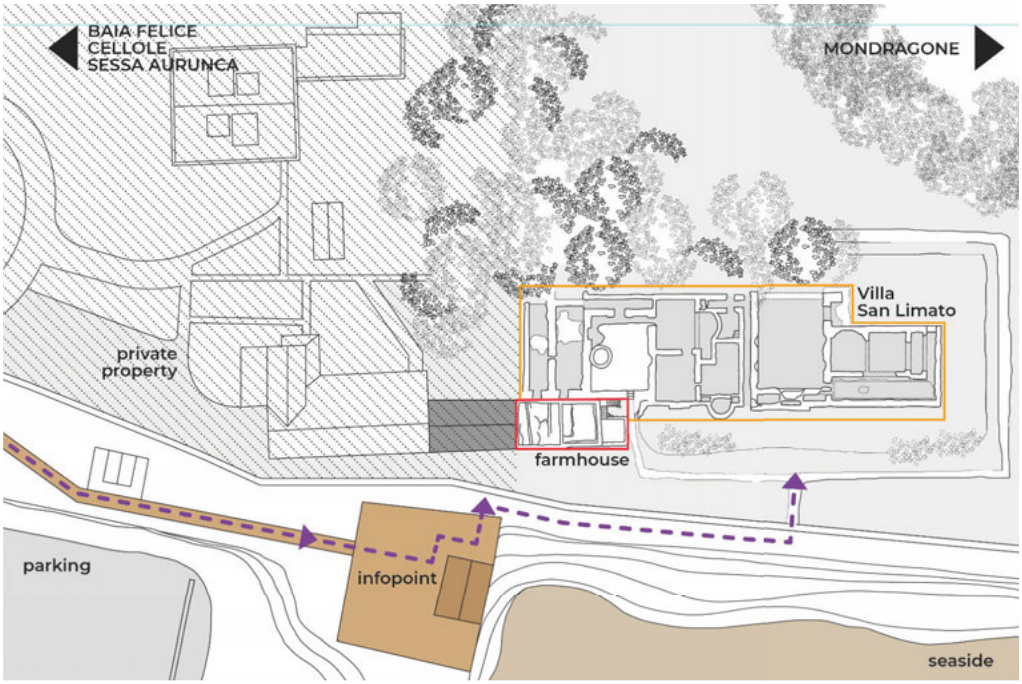

Fig. 10. The masterplan of archaeological site: a new access system and itineraries are needed to improve the use of the site (Cappelli, 2021)

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