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The Roman baths of Cugno dei Vagni: Methods of Intervention in the Archaeological Areas

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ABSTRACT

The paper presents a method for the enhancement of archaeological sites, through a comprehensive approach to architecture, from his historical knowledge until the intervention on the ancient remains, with attention to the relationship with the surrounding area. In fact, the restoration project cannot be understood as an act aimed solely to the protection of archaeological sites, but also as an intervention that is necessarily extended to the context. Is thus generated a complex process, aimed at the recreation of a place in which archeology and landscape may contribute to the discovery of a historical identity of the community.

The study-case is the archaeological site of Cugno dei Vagni, located in the south of Italy, in Metapontine area; the archaeological remains belong to a Roman thermal baths, dated to a period between the beginning of the imperial age up to Severi. The visible ruins include frigidarium, tepidarium, caldarium, preceded by a discovered notation. The necessary water supply facility was secured by a system of canals, located upstream of the complex.

The restoration project work at different scales of design and is divided into several phases of implementation. At the architectural scale, operates primarily on the safety of the archaeological remains, through interventions for the protection of the walls and the floor surface. Secondly, it aims to enhance the remains and to improve their readability, through the raising of the walls with the technique of pisè , the construction of walkways and pedestrian paths; the creation of a new decking in the frigidarium , with a reproduction of the original mosaic floor. At regional scale, the project proposes the inclusion of the site in the complex of an archaeological park of Metapontine area, through the realization of paths and information areas.

KEYWORDS: Archaeology, roman baths, restoration, museology.

1 DESCRIPTION OF CURRENTLY VISIBLE STRUCTURES

The place of Cugno dei Vagni in Nova Siri, in the Basilicata region, has long been known for the presence of a Roman thermal baths, dated, based on the construction techniques used, for a period between the beginning of the imperial age to the Severi . The site is located on a hillside terrace at La Taverna, on the eastern slope of a plateau: it is a hill overlooking the Ionian coast, in the area of Metaponto, about two and half kilometers from the right bank of the river Sinni and directly overlooking the "Regio tratturo", the main connecting route between the colonies, already existing in Greek times. The archaeological remains that are currently visible occupy an area of approximately 35 x 25 m. On the basis of investigations carried out, on the characteristics and construction techniques adopted, on the

typological and morphological structure of the various rooms that make it up, and by comparison with another similar Roman thermal structure, it was possible to assign to each space its function. It's more difficult to know with certainty the route taken by users when the spa facilities were in use, both for the lack of knowledge of the true extent of the complex, both for the great variability of paths generally adopted.

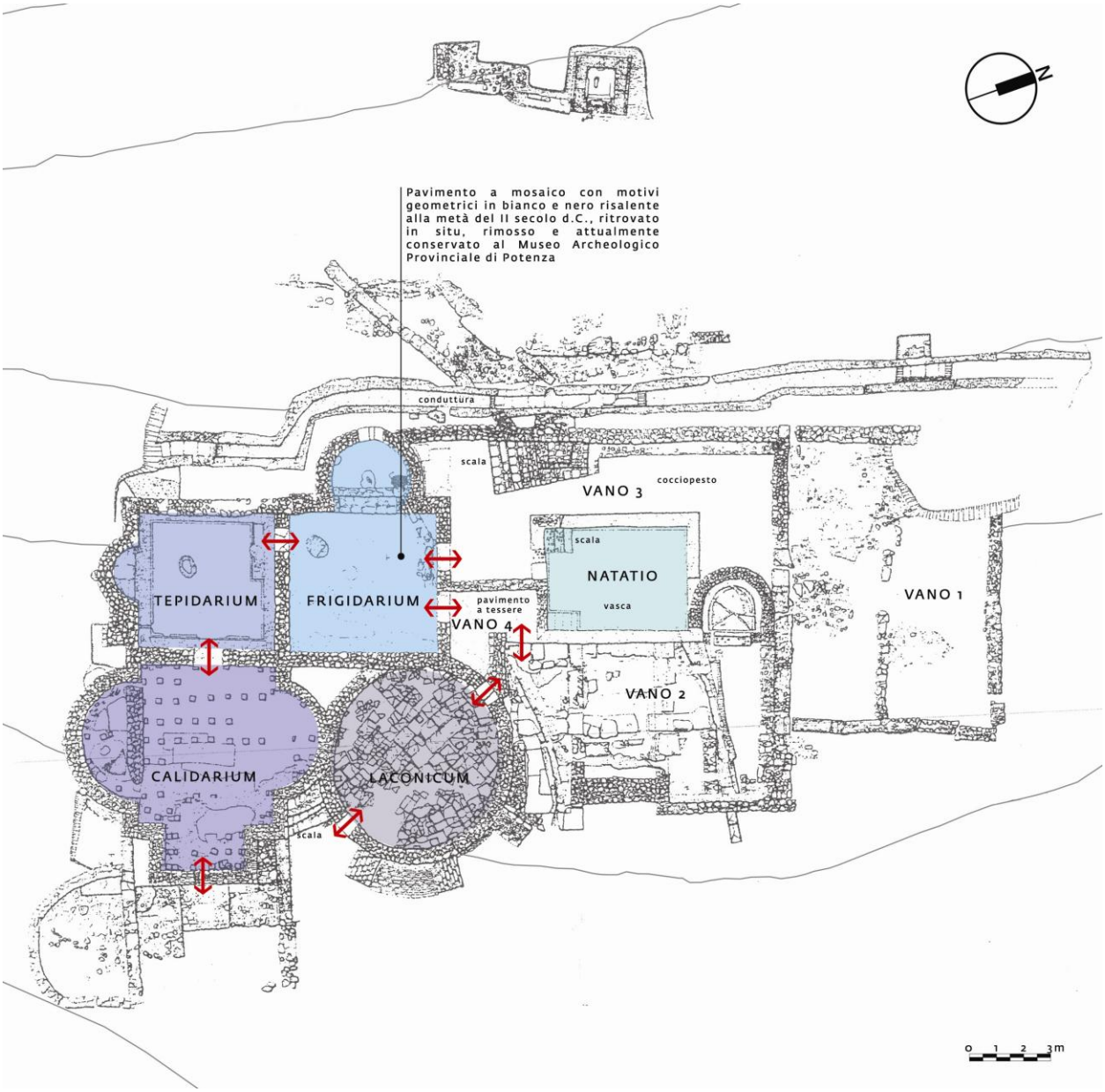

Figure 1: Site plan indicating the functional diagram.

In any case, as far as is currently visible, the complex is so articulated:

- The first room was an open space with notation, or a swimming pool. The latter develops an approximate area of 20 m^2 (5.40 x 3.80 meters), while the surrounding space attached, irregularly shaped, has an area of 38 m^2, with flooring in opus signinum;

- Consequently, one of the smaller rooms attached should have the function of apodyterium or unheated space used as a dressing room;

- The following space is the frigidarium, almost square in plan with a terminal apse and three doors: the two facing north, communicate with the previous room equipped with swimming pool and with a smaller space, and the other communicates with the tepidarium. The frigidarium has an area of about 29 m^2, excluding the apse (6.5 m^2). Inside there was a bathtub for bathing in cold water, with apse. In frigidarium was found a mosaic floor with geometric patterns in black and white, dating from the middle years of the second century AD, removed, and now preserved in the Archaeological Museum of Potenza;

- Follows the calidarium, a square, with three apses: the first rectangular apse facing east, the other semicircular oriented north-south. This is the largest compartment among those visible and with an almost certain function, since it covers an area of about 47 m^2. It was the space used as hot baths. From the available surveys, it appears that they are still present in situ the "pilae", or pillars of masonry, equidistant from each other, which supported a suspended floor (suspensurae): this elements created a cavity, said hypocaustum, in which circulating hot air obtained through a wood-fired oven (hipocausis);

- Finally, the laconicum, a circular room of about 20 m^2, originally intended to the sauna and the sweat baths. Generally were covered with a frustoconical or spherical vault, characterized by a circular opening in the top, the lumen, itself closed by a bronze disc, the clypeus. This element was mobile, by means of chains, and allowed, through the opening or the closing of the lumen, to control the gradation of heat within the room.

The remains so far unearthed are the southern nucleus of an architectural complex even larger, which seems to occupy the entire eastern slope of the hill Cugno dei Vagni: surveys conducted by Lorenzo Quilici in the 60s of the twentieth century confirm the hypothesis of a total extension of 4000 m^2. In the northern nucleus have been found the remains of a second steam bath and a water system. The current hypothesis is that it is an open complex, consisting of a series of distinct and differentiated cores, developed in a north-south for a total extension hypothetically between 120 and 200 meters. These dimensions would be similar to those of some monumental complexes with curative functions, such as, for example, Taurine baths of Civitavecchia.

2 THE ENHANCEMENT PROJECT OF ARCHAEOLOGICAL SITE: METHODOLOGY

The project of restoration/conservation cannot be understood exclusively as an act aimed solely to the protection of archaeological remains, but also as an intervention that is necessarily extended to the whole context. Thus it comes to generated a complex process, all aimed at the recreation of a place where archeology and landscape, integrating and supporting in a two-way, may contribute to the discovery and the formation of a historical identity of the local community; this identity is understood as an essential prerequisite for integration between past and present and for a promotion of cultural resources and historical and archaeological heritage of the area. The goal is the creation of a diffused museum, home to a relationship of exchange between the potential of the archaeological remains and the assets offered by the area.

The project of musealization of an archaeological site responds essentially to two will apparently antithetical, but reconciled through rational choices and design strategies: on the one hand there must be the will to preserve the void, preserving the natural character of the place; second, instead , to integrate the archaeological area in the social life of the surrounding territory, changing the appearance of the presentation to the public and making it a center of attraction within the tourist paths. It should be avoided to reduce the site to the place reserved exclusively for use by sectoral experts, scholars and intellectuals. It should be encouraging the opening to a wider audience, aiming at the creation of a center aimed at quality cultural / educational tourism, non-invasive and compatible with the environment, the protection of the site and especially with the essential prosecution of scientific research.

This solution, surely in order to protect of cultural heritage, but also for the benefit of communities and institutions, as for the promotion of a form of self-sustainable livelihoods of the site. Within this

context, they become fundamental the drafting of a management plan, as well as the perimeter of the museum / archaeological park to the regional scale, within the existing planning instruments, which guarantee greater protection and enhancement.

Figure 2: View of the archeological remains.

3 DESIGN GUIDE FOR THE ENHANCEMENT INTERVENTION

Possible guidelines for the development and transformation of the archaeological site of Cugno dei Vagni must necessarily be carried out along three parallel paths:

- Knowledge: the sum of those scientific operations suitable for the complete understanding of the place from the historical and artistic point of view, prerequisite for all subsequent operations.
- Enhancement: the sum of those scientific operations aimed at improving the site from the point of view of usability and readability by users (tourists and scholars).
- Promoting: the set of those operations aimed at including the site in the circuit of high quality tourism of cultural and educational nature.

The first of these, namely the knowledge of the place and the archaeological remains, is the prerequisite for any operation to be performed on the site, for a transformation and enhancement conscious and aimed in the first place to the preservation of the existing. A first phase of the project should provide for the acquisition of the studies produced so far. Their cataloging, archiving, in order to allow an easier consultation, which may be preparatory for future studies. For this purpose, could play a character of considerable practical utility the digitization of these studies, which would allow a greater

spread, and the possibility of consultation over the web. In agreement with the competent authorities, in particular with the Superintendence regional for Archaeological Heritage, you could also think of a new campaign of excavations.

The next step, the enhancement, should be implemented in two main directions: the first aimed at the physical transformation of the archaeological site into an outdoor museum accessible to visitors; the second one, virtual and facing the world of multimedia and information technology. As regards the first, in line with the directives of the long tradition of Italian architectural culture in the field of restoration and conservation, any intervention planned and implemented is subject to three main criteria:

- The recognition. Each contemporary intervention must be clearly made recognizable with respect to the elements and original parts, through precise and encoded technical expedients (e.g. differences of matter, color, surface machining, undercut, etc...)
- Reversibility. Any intervention must be made with techniques that allow the complete reversibility, i.e. the full restoration, without damage, of the conditions pre-existing to the intervention itself. So it becomes essential to use minimally invasive construction techniques and suitable materials.
- Sustainability. Any intervention should prefer the use of natural materials, eco-friendly, low environmental impact, recyclable, preferring the dry assembly. It is also appropriate to use materials characterized by high durability and low maintenance cost.

4 DESIGN GUIDELINES FOR THE ENHANCEMENT OPERATION: THE FIRST PROJECT PHASE

The first phase of the project is geared to ensure the conservation and protection of ancient buildings currently visible. The first goal is to clean up the site by the infesting material, as well as arrange to prepare devices for the protection of the remains, particularly from atmospheric disturbances. Second, to ensure the accessibility of the site to visitors, is expected to implement interventions to reduce the points of interference between the paths of the visitors and the archaeological remains: it points to the dual effect of guiding and directing users to the point of greater interest, through a logically structured on natural paths of enjoyment of the site, while improving the overall readability and safeguarding its integrity.

4.1 Conservation and Protection: cleaning

The weeds present at an archaeological site involve issues of different nature. In the first place, their presence affects the stability and life itself of the artifact for mechanical and chemical damage caused by the roots. The latter are caused by exudates secreted from the roots, which cause the solubilization of the mortar with the inevitable erosion by the atmospheric agents. To these must be added two other negative factors, namely the creation of an ideal place for the presence of unwanted animals in areas accessible for the tourist and the production of allergens. Finally, we must consider the fact that weeds hinder the readability of the site, hiding the artefacts, forcing tourists to "imagine" rather than to assess the archaeological area.

In the specific case of Cugno dei Vagni, the amount and the type of weeds not constitute obstacle to overall readability of the archaeological remains; herbs are, in any event, and as previously mentioned, a danger to the integrity of the artifact. Therefore, it is expected the chemical removal of weeds, through the repeated application (2 times per year) of herbicides and chemical weed killers, by application with repeated interventions (for at least 2 years), run by avoiding, for example, treatments in the presence of wind, the imminence of precipitations, in the early morning hours, assessing the proper soil moisture. This operation would, in relation to the caldarium, partly to bring to light the pile for suspensurae.

4.2 Protection and readability: interventions on walking surfaces and walls

After the cleaning step, to restore the floors throughout the site, and at the same time protect the remains still present, it is proposed to make a filling with white gravel of the river, draining, with a thickness of 10 cm, possibly treated for prevent the formation of new weeds, laid on a substrate of non-woven fabric, stabilizer and anti-root, providing the slope minimum necessary for the watershed of the rainwater. The adoption of filling in gravel would also have the effect of improving the overall readability of the site, highlighting the walls through the material and color contrast.

Also for the protection of building structures, it is proposed to use a slight elevation of walls itself, varying in height (to bring the walls adjacent to heights comparable), utilizing the technique of pisè. This construction technique (whose name derives from the Latin *pinsare*, i.e. grind) is based on the construction of walls with wet clay (to prevent cracking during drying) compacted with appropriate instruments, inside wooden shuttering of limited height and removable. The wall may have a variable thickness and is made in layers, beating the clay with wooden instruments from the wide head, so as to make it compact and accelerate its drying. Once the ground has hardened, it shall dismantle formwork for restore it to the side, repeating the process until the desired height is. It is a constructive technique, also known as opus formaceum, widely used since ancient times, even in the Roman and Italic. In order to preserve the existing masonry and make recognizable contemporary intervention compared with the original structures, between the latter and the raising of pisè made with the technique, it will be interposed a thin lead foil (thickness 0.35 mm) shaped by hand directly on the masonry. Through the technique of pisè, we guarantee: high environmental sustainability (natural and environmentally friendly material that does not require industrial processes or chemical components for processing); recognition of the parts added to those historical; low cost of construction and installation; need to unskilled labor; maximum reversibility without damage for existing structures; protection of existing structures from degradation; improvement of the readability of the thermal complex.

Also for the protection of the rests, in particular of the thresholds that identify the openings originally inserted in the masonry, it is proposed to realize the lifts elements (ladders in the metal structure and wooden treads, equipped with side protection balustrade) that enable:

- At the point of transition from one room to the next, to override the traits of original masonry, reducing the points of interference between privileged paths shown to visitors, and archaeological remains;
- In the spaces in which you want to restrict access (e.g. the caldarium with suspensurae or laconicum); a point of view slightly elevated allowing for a comfortable viewing space in front, suggesting the inappropriateness of the entrance to the visitor.

4.3 Restoring the mosaic

Finally, it aims to achieve, in the frigidarium, a raised floor practicable, posed on the underlying gravel fill, finish with a pvc printed, which reproduces the original design of the mosaic found in situ and removed. The supporting structure will be made with supports adjustable in height, consisting of a three-dimensional head and a spacer tube of galvanized steel, steel beams printed with a omega section; beams diagonal bracing. Above the metal support structure, laying the panels that generate the decking, with panels in wood conglomerate and calcium sulphate, of a thickness of 42 mm. with plastic edges. The floor finishing, glued to the support with acrylic adhesives in aqueous dispersion, will be achieved with the floor slabs of printed PVC, total thickness 2.5 mm, printed with the reproduction of the original mosaic.

5 POSSIBLE FUTURE DEVELOPMENTS AND HYPOTHESIS OF INTERVENTION AND ENHANCEMENT

If in the future they found more economic resources to be allocated to improve the site, we briefly describe the possible guidelines for the preparation of a more comprehensive project to upgrade and enhance in a synergistic process that involves all aspects of tangible and intangible assets.

5.1 Knowledge

First, given the circumstances about the true extent of the architectural work, it would be essential to establish new and additional survey and excavation campaigns, designed to uncover any possible archaeological remains on the site, offering an image as a whole and clarifying the complex and its articulation and function, especially in relation to the surrounding area.

5.2 Usability

In the second order, it would become necessary provide for a further improvement of the usability of the site, in order to make the visit easier and safer for users (tourists and scholars). To this end, it becomes essential to provide routes within the site consist of steel bridges, modular, with a wooden decking, which guide the visitor on the site, organizing and directing the flow of tourists to the privileged vantage points, while safeguarding the remains. Would be to design systems resting on the ground that avoid the need for perforations for foundations, while guaranteeing the stability of the intervention. In addition, it should be reconsidered access paths to the same site, paved with the most suitable materials, technically and formally coherent with the historical context surrounding. Similar redevelopment and global rethinking should cover the elements of the fence. Given the shape of the site, creating a raised point of view would favor an overall perception of the spa facilities and a better understanding of themselves by tourists. It should be realized in the highest part of the plateau, located immediately behind the remains, identifying a technically and formally similar to that for the internal paths, i.e. metal frame and wooden walkways.

In a more advanced implementation phase of the project, you could equip the parking areas with small structures suitable for the reception of visitors, distribution of educational material information, which can accommodate multimedia workstations and services, preferring to achieve environmentally friendly materials and dry assembly. In addition, it would be feasible areas for to the temporary storage and cleaning of archaeological finds from the site, as well as the provision of educational spaces for visitors. These buildings would be at the service of the entire archaeological park, including the nearby necropolis, and would be of great use for the execution of the new digs. At the same time, where applicable, the educational spaces would be a matter of great educational value, for example for students who may participate in guided tours.

5.3 The enlargement of the territorial scale

A further class of interventions should necessarily involve the territory as a whole, in order to achieve the integration of the archaeological park, the historical and artistic resources more dispersed in the territory of Nova Siri, the connecting paths between them. The creation of an identitary and communicative common image, highly identifiable, is, in fact, an essential prerequisite for the transformation of this complex system into a resource of tourism and culture, and therefore economic, for the entire territory. So, for example, the creation of signage elements by the strong graphic character, repeated at the site and along the local paths, encourages the recognition of the place giving it an identity in a unitary context. The creation of bicycle and pedestrian paths, would favor the accessibility to a wider regional scale, linking it to other tourism resources of the area, always with a view of environmental sustainability.

5.4 Exploitation of the opportunities offered by information technology

A first outcome of the studies conducted on the site, could be his full three-dimensional virtual reconstruction. It would be possible to reconstruct, albeit hypothetically, the original appearance of the complex, even in the decorative pieces. Through the new virtual applications and the Internet, it would be possible to "visit" virtually. The thermal complex. The virtual reconstructions, through programs of augmented reality, may even be visible directly inside the archaeological site through apps for smart phones and tablets. On the display of the mobile media would be possible view the virtual reconstruction

of the building both in the form of still images and / or three-dimensional animations, both as three-dimensional models that virtually overlaid or replaced to the ruins. Through the adoption of now common and popular software for reading QR codes, the user may, at the same time, acquire historical information, but also tourism and promotional purposes.

Figure 3: Example of signage and raised observation point.

5.5 Organisation of events in situ

In order to allow the site to the archaeological park and a use by visitors who can go further than the specific interest in the archaeological area, you might think about the organization of events (cultural, recreational, entertainment, compatible with the presence archaeological remains) within the site reconfigured, creating, thus, a further source of tourism promotion, expanding the possibilities, the time and manner of use of the archaeological site itself.

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