University of Applied Sciences and Arts of Southern Switzerland
SUPSI

Swiss Conservation-Restoration Campus

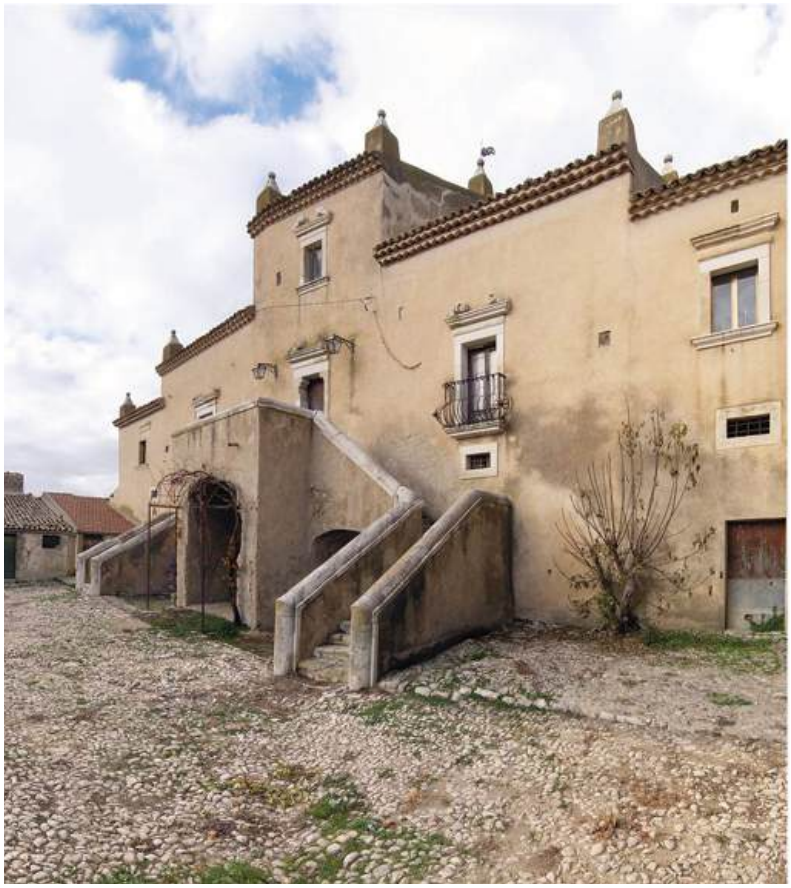

Fig.1. Second courtyard facing Chapel of San Giuseppe

VILLA MASSERIA DI CACCIAMO

COMUNE DI CALASCIBETTA

Bachelor in Conservation
Stage AW2

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Period of Activity: 7th July - 1st August

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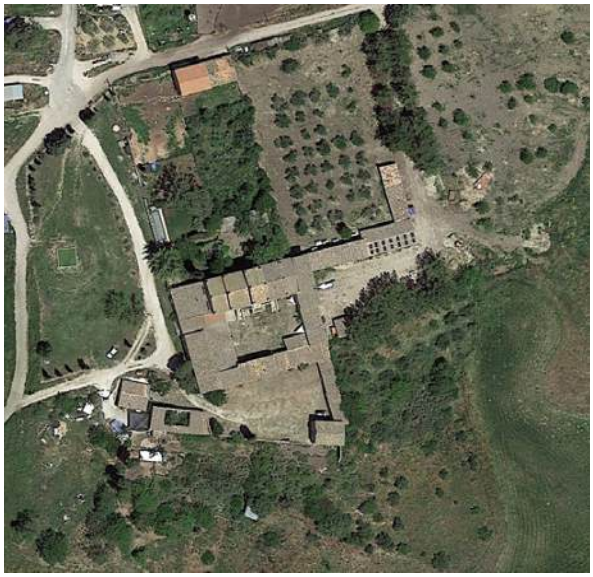
1. Introduction

The report in question aims to describe the work done during the summer internship lasting four weeks (7th of June - 1st of August) at the Villa–Masseria of Cacchiamo, located in the municipality of Calascibetta (province of Enna). This villa represents one of the most important surviving examples of rural aristocratic architecture in Sicily. Its position at the crossroads of the three valleys of Sicily and along the main transhumance routes made it not only a center of agricultural production but also a hub of exchange between different parts of the island. The site embodies the evolution of the Sicilian masseria from its medieval fortified origins to its eighteenth-century transformation into a villa complex, enriched with gardens, monumental architecture, and refined decorative elements.

The present study is part of a conservation project funded under the **PNRR MIC3 – Intervention 2.2 – Protection and Enhancement of Rural Architecture and Landscape**, with the aim of safeguarding the villa's architectural and decorative heritage. The project focuses on the **piano nobile** (main floor), which preserves an extraordinary range of artworks: mural paintings, stucco decorations, painted wooden ceilings, and a monumental stone staircase. These elements, though executed in different techniques and materials, form an integrated decorative system reflecting the cultural and social ambitions of the Bongiorno family during the eighteenth century, while also preserving earlier sixteenth-century structures commissioned by the Ferreri family.

From a conservation perspective, the complex presents a unique case study due to the coexistence of multiple techniques and materials—lime plaster murals, polychrome stucco, tempera painting, and stone architecture—each subject to specific forms of deterioration. Past restorations carried out between 1987 and 1995 ensured the survival of many decorations, but they also introduced materials and methods that today require careful reevaluation according to current principles of minimal intervention, reversibility, and material compatibility.

2. The Building



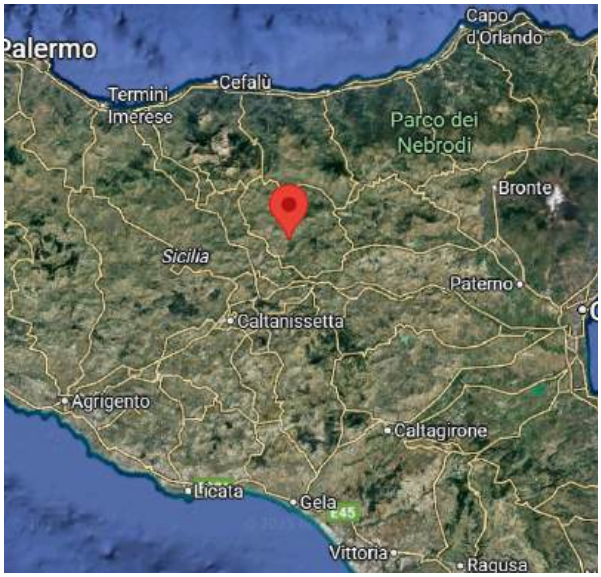


Fig.2 & 3. Geographical view of the location

2.1 Environmental Context and Use

The Villa–Masseria of Cacchiamo is situated on a plateau overlooking the valley of the Morello River, in the municipality of Calascibetta (province of Enna). Its location on the watershed separating *Sicilia Citra Salsum* from *Sicilia Ultra Salsum* places it at a strategic crossroads, historically linked to pastoral transhumance and the transportation of grains. The surrounding landscape is characterized by agricultural land, orchards, and natural coral outcrops. Historically, the masseria was the center of a vast estate dedicated to cereal production and livestock breeding. Today, the building is no longer used for agricultural purposes but remains a valuable cultural asset, subject to protection under decree no. 952/1988. Its current role is primarily historical and cultural, with planned interventions aimed at safeguarding and revalorizing the site for future public use.

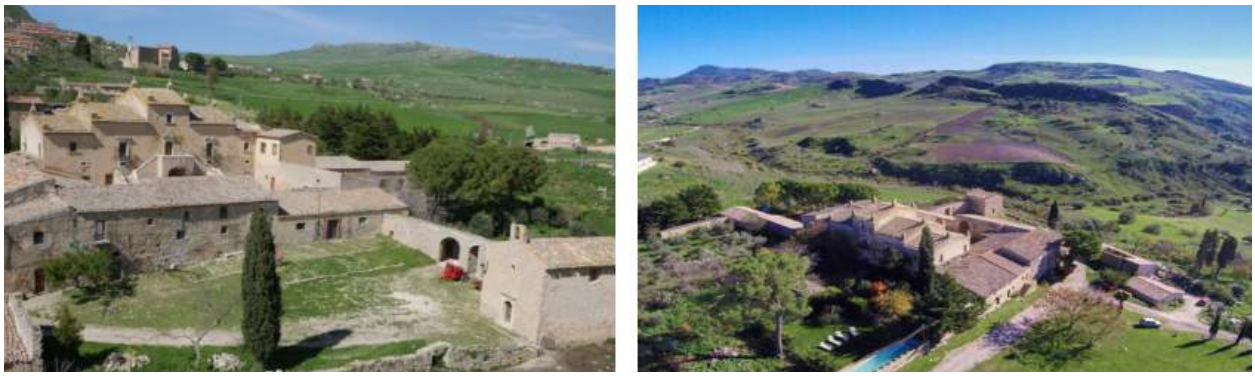


Fig.4. View of the second courtyard facade

2.2 Description of the Building

2.2.1 Exterior

The exterior of the Villa–Masseria of Cacchiamo reflects both its rural origins and later aristocratic ambitions. The main complex is constructed in local stone masonry, with thick walls designed for durability and thermal insulation. Openings are modest and functional on the lower levels, originally intended for storage areas, stables, and service functions, while the piano nobile is characterized by larger windows, designed to enhance illumination and ventilation of the decorated spaces.

The building's layout develops around two large courtyards paved with local stone. One courtyard is directly connected to agricultural functions, with service wings, storage areas, and the monumental watering trough carved from stone. The second courtyard is the principal access point to the piano nobile (noble floor), featuring a monumental staircase that is a hallmark of the building's grandeur. The staircase, with its imposing presence, draws inspiration from contemporary noble villas in Palermo, such as those in the Piana dei Colli and Bagheria. This courtyard facing the chapel of San Giuseppe emphasizes the symbolic and representational dimension of the complex, integrating religious and residential functions into a single architectural unit. The third courtyard is centered around a large stone watering trough, which highlights the estate's agricultural roots, serving as a reminder of its origins as a fortified

farmhouse. Roof structures are pitched, covered with traditional terracotta tiles, in continuity with Sicilian rural building traditions. Architectural elements such as triple-projecting cornices, stone-framed windows and balconies, and the chapel's frescoes contribute to the villa's aesthetic and historical significance. In 1988, the villa-masseria was declared a monument of significant historical-artistic and architectural interest.

2.2.2 Interior

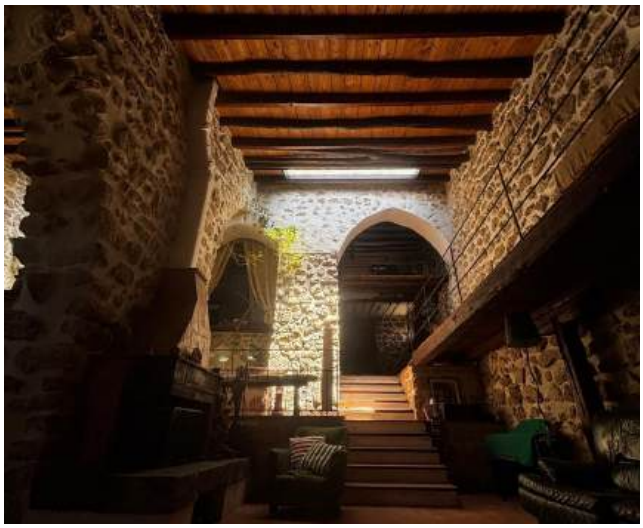


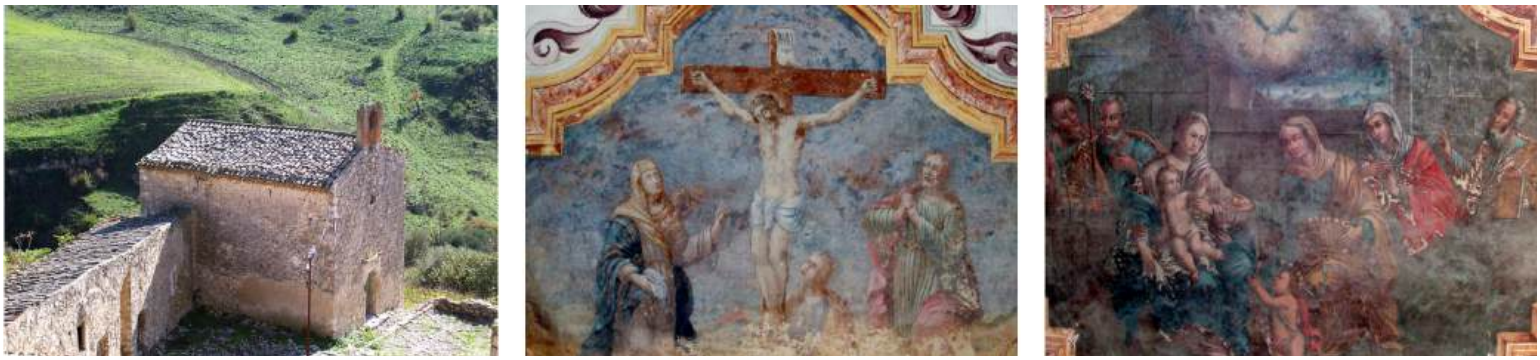
Fig.5. Ground floor (Living room and Kitchen)

The interior organization of the villa corresponds to its dual function as both agricultural estate and noble residence. The ground floor, with its series of barrel-vaulted rooms and service areas, was dedicated to production, storage, and animal husbandry. These spaces are characterized by robust masonry, limited decorative finish, and direct access to the agricultural courtyard, emphasizing practicality over ornament.

The **piano nobile**, accessed via the monumental stone staircase, reveals the representational heart of the building. Here, the spaces are arranged in an enfilade, a sequence of interconnected rooms that allows for ceremonial circulation and visual continuity. The walls were finished with lime plaster, later enriched with stucco frames, gilding, and mural paintings.

Ceilings on this level are of particular interest: wooden beam structures are painted with simulated coffering and floral motifs, demonstrating both decorative refinement and economical adaptation of materials. The flooring, where preserved, consists of terracotta tiles or stone slabs, durable yet consistent with eighteenth-century Sicilian interiors.

The chapel of San Giuseppe houses frescoes attributed to Giuseppe Tresca (1710–1795), adding to the artistic richness of the interior (Fig.6). The villa's design and decoration reflect the cultural aspirations of its owners, blending functionality with artistic expression to create a space that serves both practical and ceremonial purposes.



Fig,6 The exteriors and interiors of The chapel of San Giuseppe

2.3 History and Cultural Value

The origins of the masseria date back to the sixteenth century, when the Ferreri family purchased the fief of “Lo Cachimo” from Giovanna Ventimiglia in 1568. The Ferreri obtained the *licentia populandi*, which allowed the creation of a small settlement with its own chapel. This early phase established the fortified layout and agricultural functions of the complex. In 1733 the property passed to Baron Francesco Bongiorno of Gangi, who initiated a radical transformation of the masseria into a villa. His brother, the architect Gandolfo Felice Bongiorno, redesigned the complex with reference to contemporary Palermo villas, while the decorative program of the piano nobile was entrusted to the Fumagalli workshop, already active in several aristocratic residences and religious institutions.

This double historical layer—the sixteenth-century fortified structure and the eighteenth-century aristocratic villa—gives the building exceptional cultural value. It embodies the evolution of Sicilian rural architecture, from defensive and productive functions to representational and cultural ones. The combination of architecture, gardens, decorative cycles, and landscape context makes the Villa Masseria of Cacchiamo a rare and significant heritage site, deserving of conservation and enhancement.

3. Condition Assessment

3.1 Materials and Execution Techniques

The primary structural elements include limestone masonry walls on the exterior, which provide both strength and thermal mass, essential for the Sicilian climate. These walls are bonded with lime mortar, allowing for flexibility and breathability, which are crucial for the building's longevity. The roof structure comprises wooden beams, likely sourced from local pine or chestnut trees, supporting a traditional terracotta tile covering. This construction method reflects the vernacular building practices of the period, emphasizing locally available materials and craftsmanship (Fig.7).

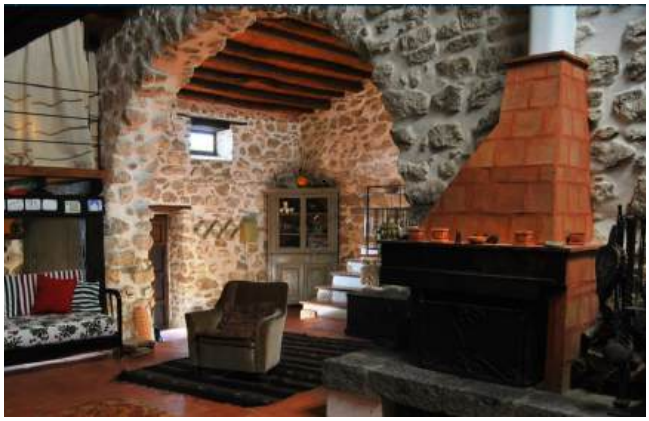


Fig.7. Visible masonry in the ground floor area

Internally, the villa features decorative elements such as frescoes and tiled floors. The frescoes, attributed to Giuseppe Tresca, adorn the chapel of San Giuseppe and other rooms, showcasing religious and mythological themes. These artworks of all the 4 rooms were executed using tempera on two canine

vaulted ceilings and one two flat ceilings divided with wooden beams. The walls of the 2nd and 4th rooms present a decorative perimeter band painted with repetitive motifs (Fig.8). In the 2nd room, the north wall contains a vaulted niche decorated with floral motifs (Fig.9). In the 4th room, a small vaulted antechamber is decorated with landscapes and putti framed by imitation polychrome stuccoes.

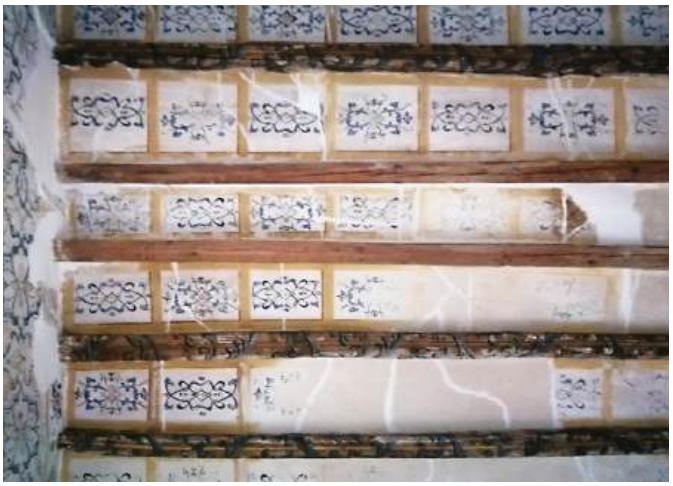


Fig.8. Repetitive motifs in Room 2

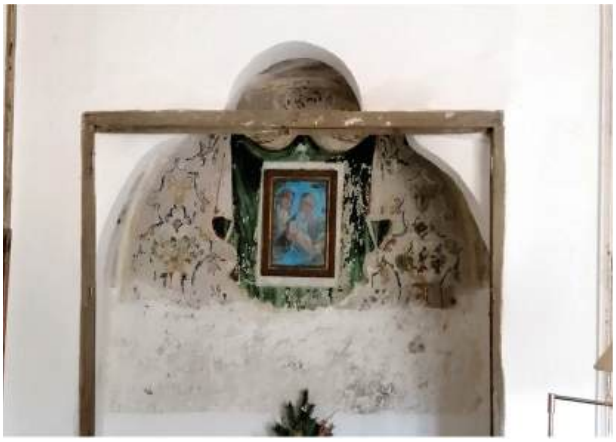


Fig.9. Vault with floral motifs in Room 2 (Chiesa)

The vaulted ceilings display a late Baroque style, where the painted decoration is framed by stucco elements that divide the space and interact with two-dimensional painted cornices (Fig. 10).

The pictorial technique used for the murals is tempera with pigments bound in lime, as evidenced by the dense application of color (Fig.11).

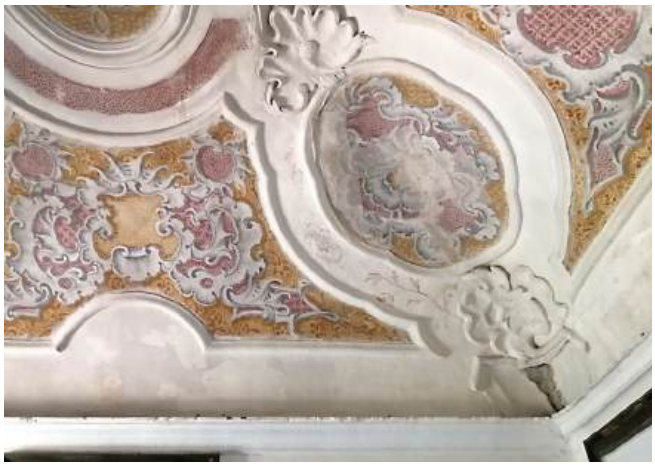


Fig.10. Baroque style painting with stucco frame in Room 3

Fig.11. Thick application of tempera pigments

The preparatory layers consist of a first *arriccio* coat, followed by one or sometimes two plaster layers to homogenize the surface and receive the decorative painting, applied in dense tempera layers (Fig. 12). In some areas, thinner and more transparent applications occur due to reduced binder content (Fig.13).

Fig.12. Dense tempera paint layer application

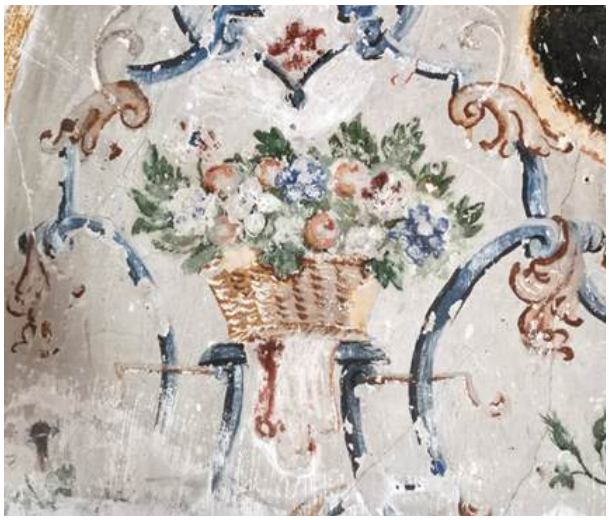


Fig.13. Thin, more transparent tempera paint application

The preparatory drawing was executed directly on the final plaster layer. Traces indicate that the transfer was carried out using the *spolvero* technique (pouncing) (Fig. 13), as well as the use of cartoons for line guidance and stencils for reproducing repetitive motifs.

Fig.13. Traces of spolvero technique

Fig.14. Grotesque-like decoration in Room 4

The palette is not highly varied. On the vaulted ceilings, warm colors predominate: red and yellow ochres mixed with lime binder to achieve mid-tones and shadows that create the illusion of volume in the painted frames. Black, used with different binder ratios, produced various shades of grey.

On the flat ceilings, cooler tones appear: alongside ochres and black, green is also used. Here, the paint layers contain less medium, producing thinner applications and giving the decorations a more linear, almost grotesque-like style (Fig. 14)

3.2 Previous Interventions

Over time, Villa Masseria di Cacchiamo has been subject to multiple interventions, evolving in character from pragmatic repairs to scientifically guided conservation. In the 19th century, the focus was on structural stability. Cracks in the masonry were filled with lime mortars, weakened areas consolidated, and roofing repaired through the replacement of deteriorated beams and broken terracotta tiles. These actions, while functional, reflected little concern for historical authenticity and were primarily aimed at maintaining the building's usability as a residence and agricultural hub.

In the early 20th century, attention shifted toward the villa's artistic heritage, especially the frescoes in the chapel of San Giuseppe attributed to Giuseppe Tresca. These had suffered from pigment loss, flaking, and discoloration due to humidity and candle smoke. Restoration methods of the time often involved visible retouching, overpainting, and plaster consolidation using animal glues and lime injections. While effective in the short term, such techniques proved unstable and sometimes compromised the frescoes' integrity. Partial restoration of the floors also took place during this period, although many substituted tiles failed to match the original decorative scheme.

The mid to late 20th century marked a turning point influenced by Cesare Brandi's conservation principles. A more scientific and historically respectful approach was adopted, focusing on reversibility and authenticity. Structural consolidation was achieved through reinforcement of cracked masonry with stainless steel ties, while wooden beams were treated rather than replaced. In the chapel, earlier overpainting was carefully removed, and fresco surfaces were stabilized using lime-based grouts and, in some cases, acrylic resins—then considered state-of-the-art. Drainage systems were also improved to mitigate rising damp and prevent further structural weakening.

By the late 20th and early 21st centuries, following the villa's recognition as a monument of historical and artistic interest, conservation shifted toward preventive strategies. These included environmental monitoring to regulate humidity and temperature, controlled cleaning campaigns on frescoes and stuccoes, additional treatments against woodworm, and the reinstatement of lime-based plasters in place of earlier cementitious mortars. Such measures reflected a commitment to sustainability and scientific rigor.

In the last two decades, the philosophy of intervention has become increasingly preventive and minimal. Conservation has focused on localized stabilization of fragile areas, hydraulic lime micro-injections to consolidate frescoes, routine maintenance of roofs and drainage, and systematic documentation of every

action. These methods, aligned with the Venice Charter (1964) and international best practices, prioritize reversibility, minimal intervention, and the long-term safeguarding of the villa's cultural heritage.

3.3 State of Conservation

The current state of conservation of Villa Masseria di Cacchiamo and its decorative apparatus reflects a complex interaction between the historical phases of construction, the materials originally employed, the effects of time, and the impact of previous restoration campaigns. Structurally, the building is stable, though not free of critical issues. The masonry walls show evidence of past movements and settlements, with localized cracks and fissures that have been partially addressed in earlier consolidations but which remain visible in some areas (Fig.14). Rising damp continues to affect the lower levels of the walls, as well as the decorative borders in room 2, manifesting in salt efflorescence, powdering, and the partial detachment of plaster layers (Fig.15).

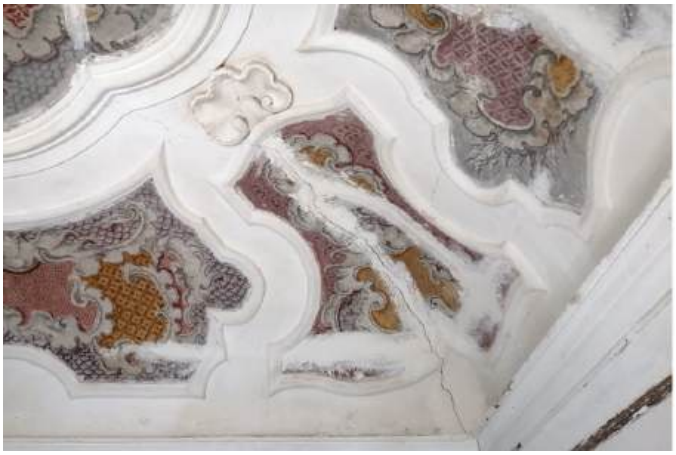


Fig. 14. Visible localised fissures and cracks

Fig.15. Salt Efflorescence and dampening

On the exterior, the plaster coatings show a heterogeneous condition. Areas treated with compatible lime-based mortars remain in good preservation, while portions where cement-based mortars were applied in past interventions are unstable and prone to micro-fracturing and detachment. The façades were also subject to biological colonization, with lichens, moss, and localized vegetation contributing to surface

degradation. Stone elements such as cornices, portals, and decorative details show erosion and rounding of edges, with additional blackening in sheltered zones due to atmospheric deposits.

The interior spaces, particularly those of the chapel of San Giuseppe, present greater vulnerability. The frescoes by Giuseppe Tresca, while stabilized in certain zones during past interventions, are still compromised by residual incompatibilities from earlier treatments. Pigment layers in some areas show chromatic alteration, particularly where animal glues or synthetic resins were previously used. Small lacunae and flaking persist, especially in zones exposed to humidity fluctuations. Surface deposits of dust and candle smoke residues are visible, diminishing the chromatic legibility of the painted surfaces. Stuccoes, though largely intact, present micro-cracks, losses of adhesion, and localized detachments (Fig.16).

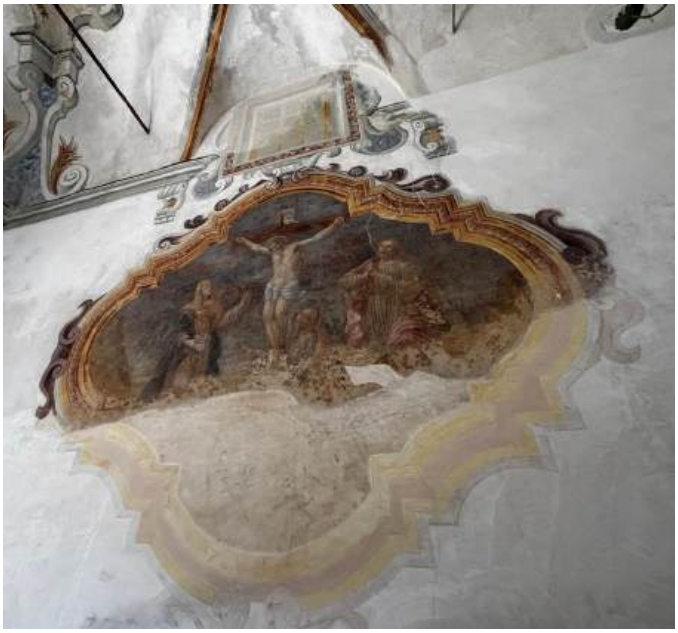


Fig.16 Fresco in the chapel of San Giuseppe

Wooden elements, including beams and decorated furnishings, show evidence of previous attacks by xylophagous insects. While repeated treatments have eliminated active infestations, the structural sections retain traces of past damage and areas of fragility (Fig.17).

Fig.17 Traces of deterioration of wood

In summary, the villa can be considered to be in a **state of conservation of moderate vulnerability**. It is not in immediate structural danger, but it shows ongoing pathologies linked to humidity, incompatible past materials, and environmental exposure. The preservation of its artistic heritage requires systematic preventive monitoring, careful environmental control, and targeted consolidation of fragile areas to avoid further progressive deterioration.

4. Conservation Intervention

During the first week of conservation activity, work was carried out on the mural paintings on the ceiling of Room 1. Retouching was performed using synthetic brushes and gouache, a water-based medium particularly suited for reversible interventions, applied according to the principle of chromatic integration. This technique was done for the reintegration of abrasions and minor losses while intentionally leaving plaster fillings and lacunae untreated for later intervention (Fig.18,19,20,21). In certain areas, where decorative motifs had lost their clarity and balance, subtle darkening and shading were introduced to recover their legibility and restore a more coherent aesthetic unity. These operations were carefully calibrated to respect the principle of distinguishability, ensuring that the additions complemented the original work without creating false historical readings.

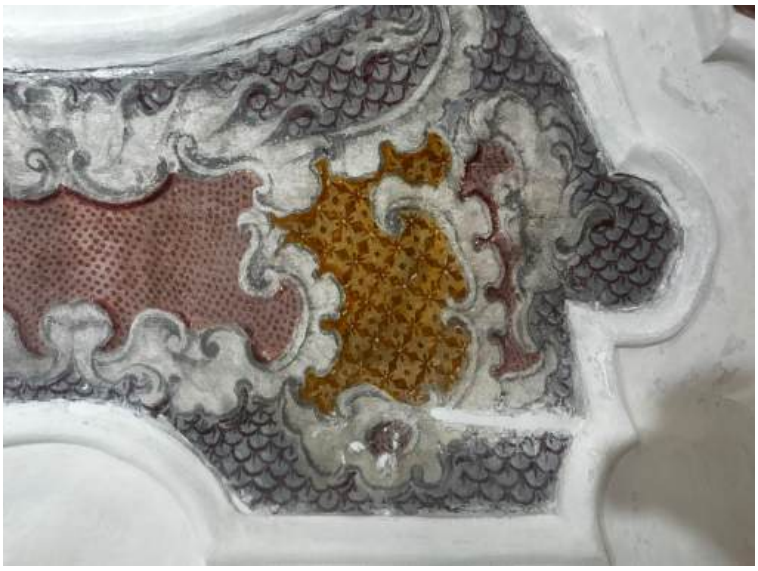


Fig.18. Before Retouching

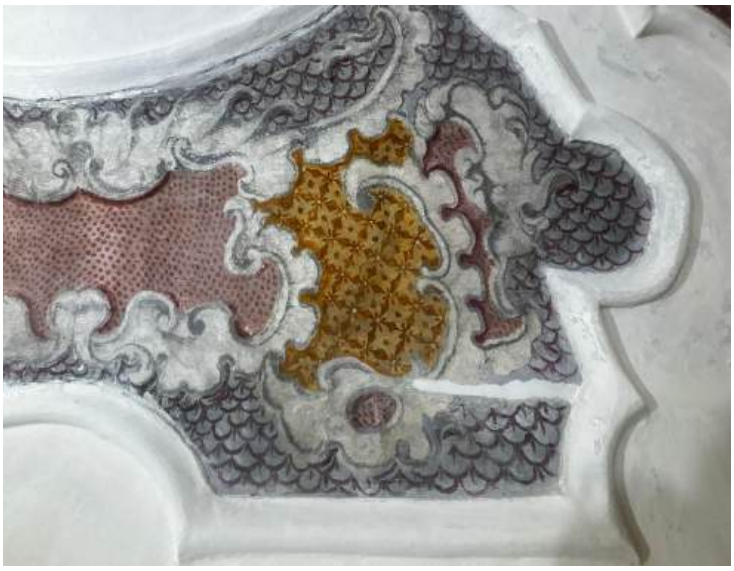


Fig.19. After Retouching

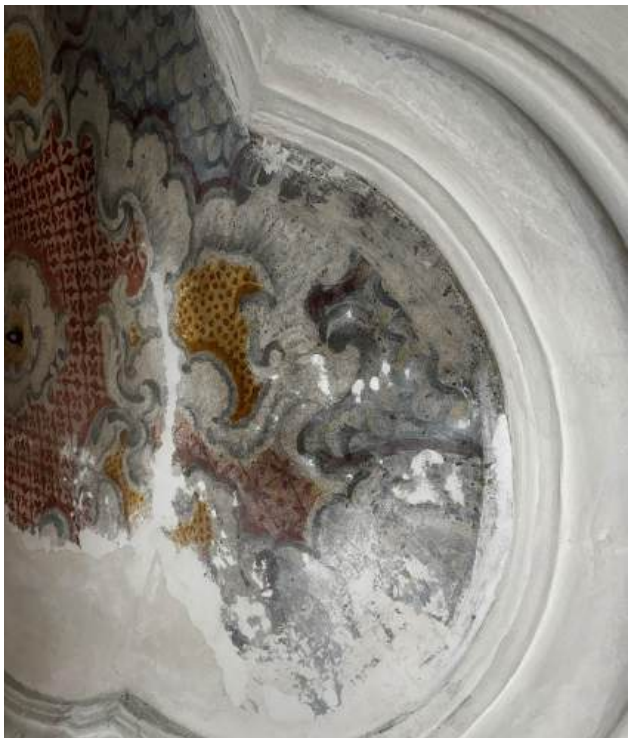


Fig.20. Before Retouching

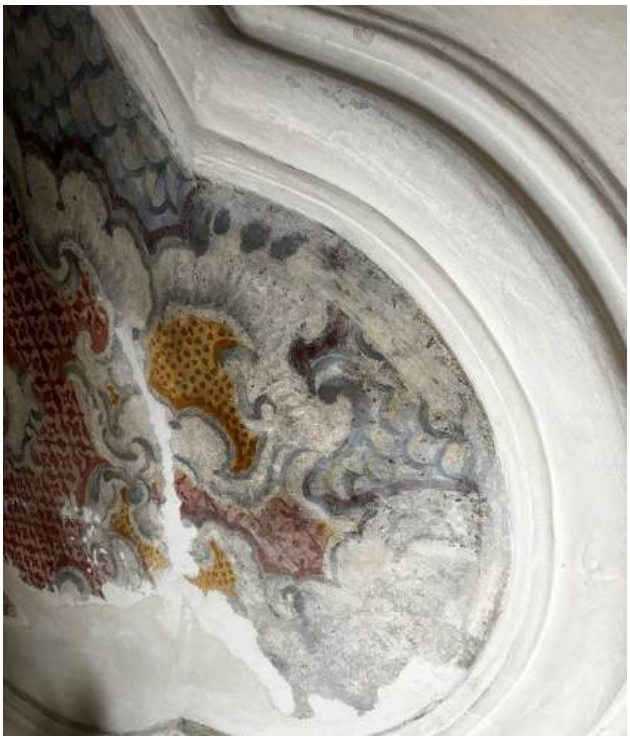


Fig.21. After Retouching

In the second week, attention shifted to the stucco-decorated frames, which still preserved traces of gilding. Since gilded surfaces are highly sensitive to water, cleaning was performed with a 1:1 solution of deionized water and alcohol, applied with a brush first and then lightly dabbing with a damp sponge to remove surface dirt and deposits. In order to uncover the authentic gilded details and stucco modeling, residual *scialbatura* (limewash layers) and *schizzi di malta* (mortar splashes from earlier works) were removed mechanically with a scalpel in fine, controlled strokes (Fig.22,23,24). The same procedure was applied to the stucco decorations in Room 2.

Fig.22 Before cleaning with scalpel

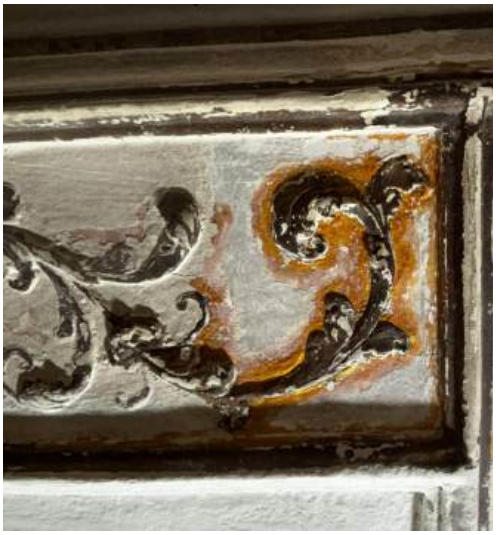


Fig.23 After cleaning with scalpel

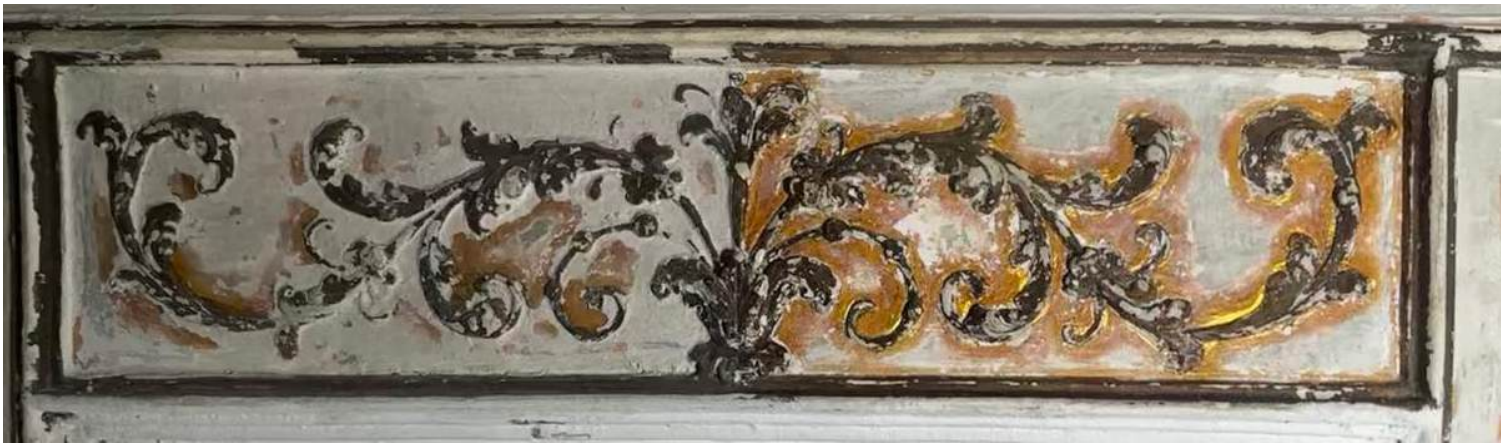


Fig.24 On the left is the unclean side in comparison to the cleaned side on the right

Following this, all frames were re-cleaned with soft-bristled brushes and a vacuum system to eliminate fine dust particles in preparation for consolidation (Fig.25). Consolidation was carried out using Acryl 33 (an acrylic copolymer dispersion produced by CTS, Florence), diluted to 5% in water. Acryl 33 is particularly valued in conservation for its ability to penetrate porous and friable stucco, strengthening it internally while maintaining reversibility and not significantly altering the material's appearance (*CTS Technical Datasheet, 2005*). The resin was applied both with a brush on surface areas and with a syringe for injection into deep crevices, ensuring uniform reinforcement (Fig.26,27).

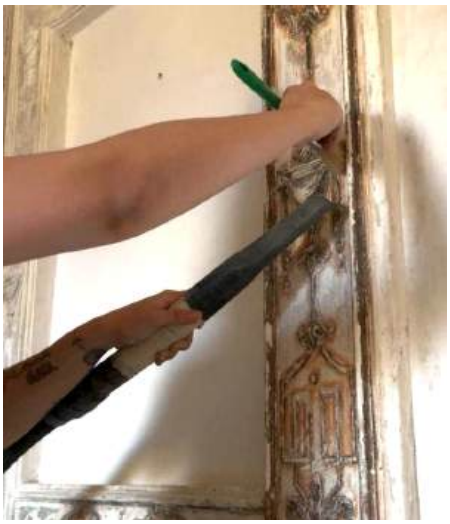


Fig.25 Cleaning dust particles with vacuum cleaner and a brush

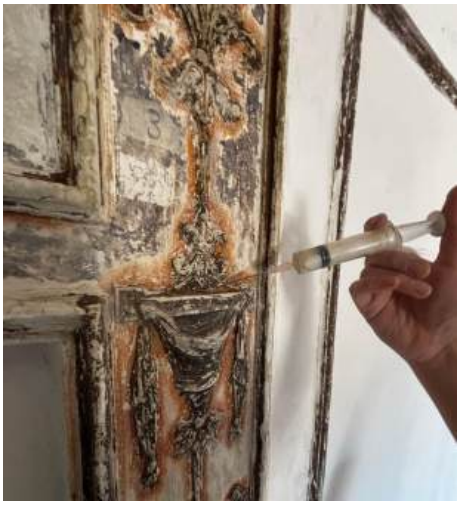


Fig.26 Acryl 33 consolidation using a syringe

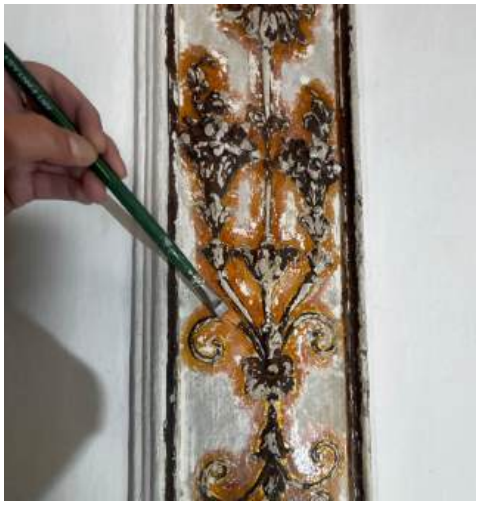


Fig.27 Acryl 33 consolidation using a brush

Losses in the stucco were then addressed with a filling paste composed of gesso and water, prepared to a toothpaste-like consistency, which was applied into lacunae, shaped, and once dry, refined with fine sandpaper to harmonize with the original decoration without erasing the distinction between old and new (Fig28,29,30,31,31,33).

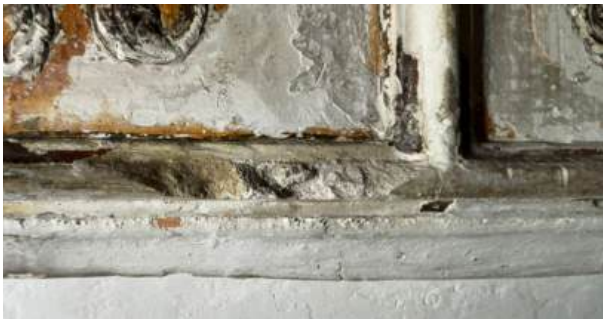


Fig.28 Lacunae

Fig.29 After filling the lacunae

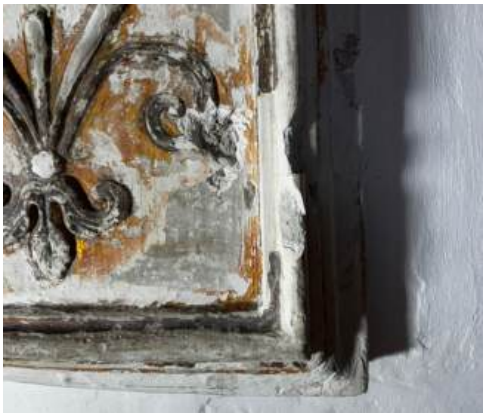


Fig.30 Lacunae

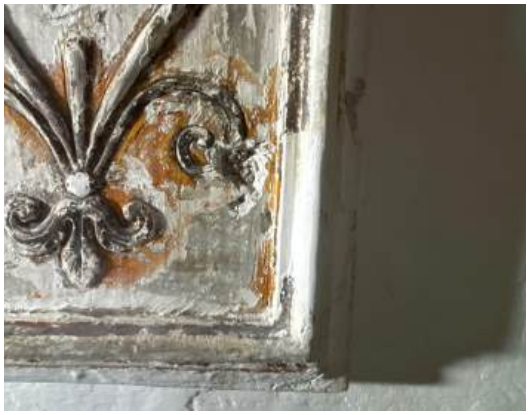


Fig.31 After filling the lacunae

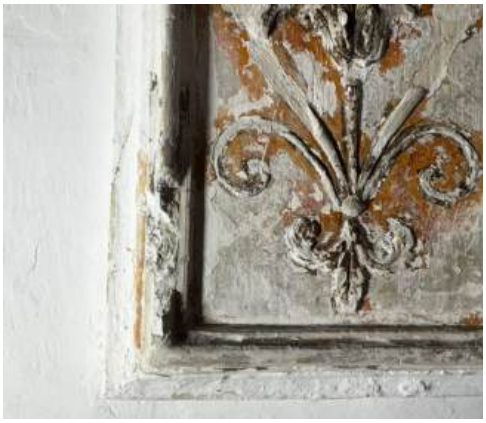


Fig.32 Lacunae

Fig.33 After filling the lacunae

The third week focused on the painted borders beneath the ceiling in Room 2, decorated with polychrome motifs in red, blue, and yellow. These pigments were found to be unstable and highly sensitive to moisture, and for this reason, cleaning was carried out with damp sponges using gentle circular movements on the surrounding areas while avoiding direct contact with the most delicate pigments (Fig.34,35,36,37). In addition, previous fillings that had encroached unnecessarily onto the painted surfaces were softened with water, gently lifted with a sponge, and subsequently refined with a scalpel (Fig.38,39). New fissures and cracks that emerged during cleaning were carefully filled with gesso mixed with water. A complete consolidation of the powdering pigments was performed first using Acryl 33 in 10% solution and then another round of Acryl 33 in 5% in order to consolidate the pigments and keep them in place.

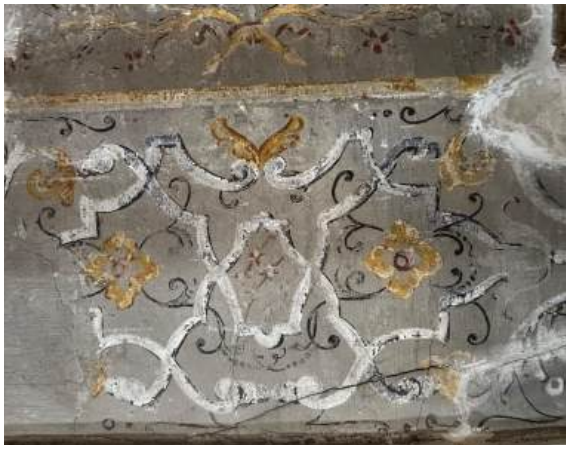


Fig.34 Before cleaning

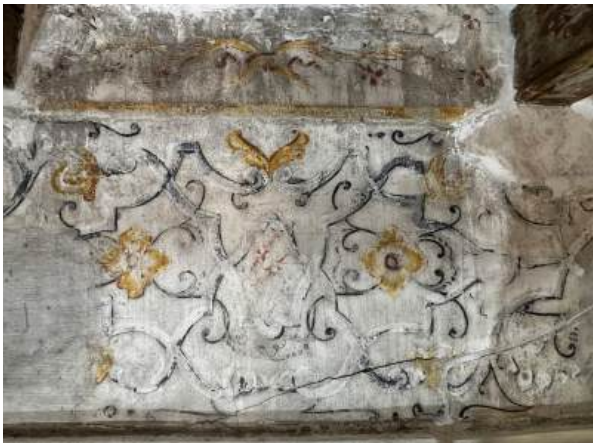


Fig.35 After cleaning

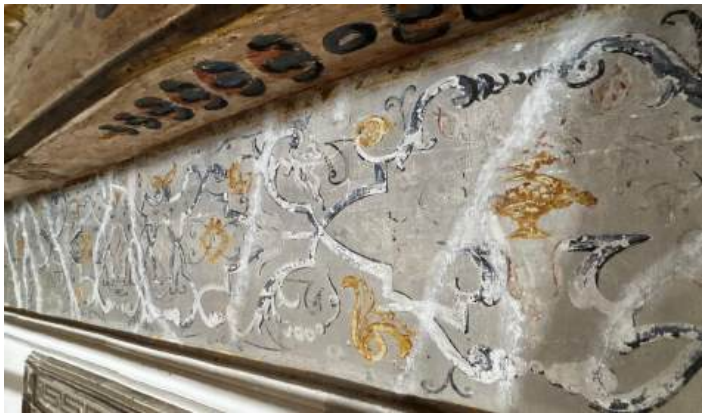


Fig.36 Before cleaning

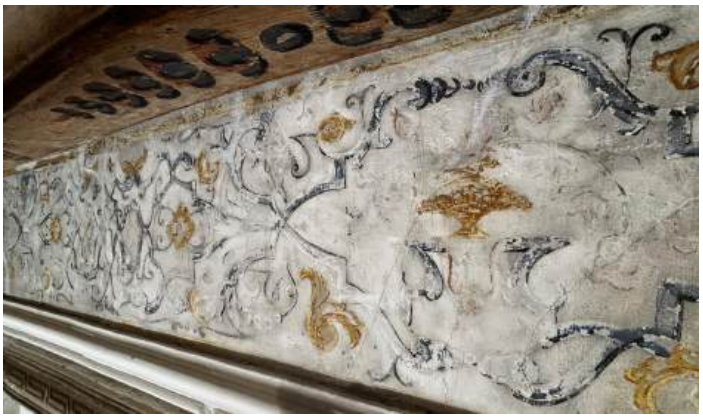


Fig.37 After cleaning

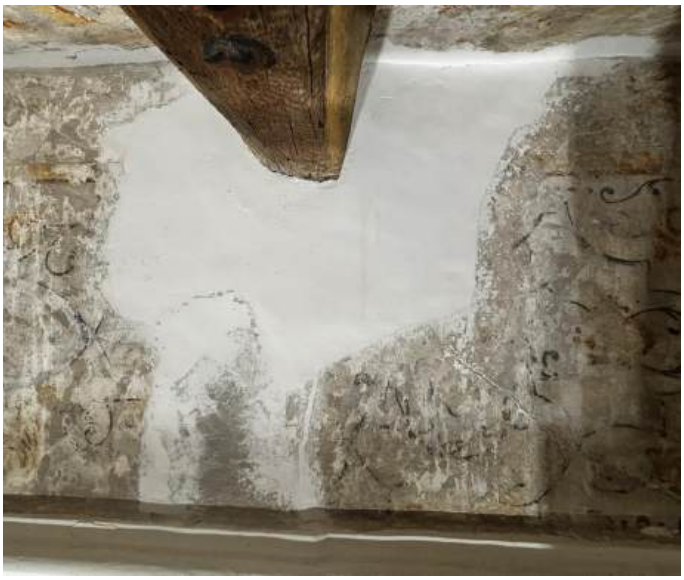


Fig.38 Before cleaning

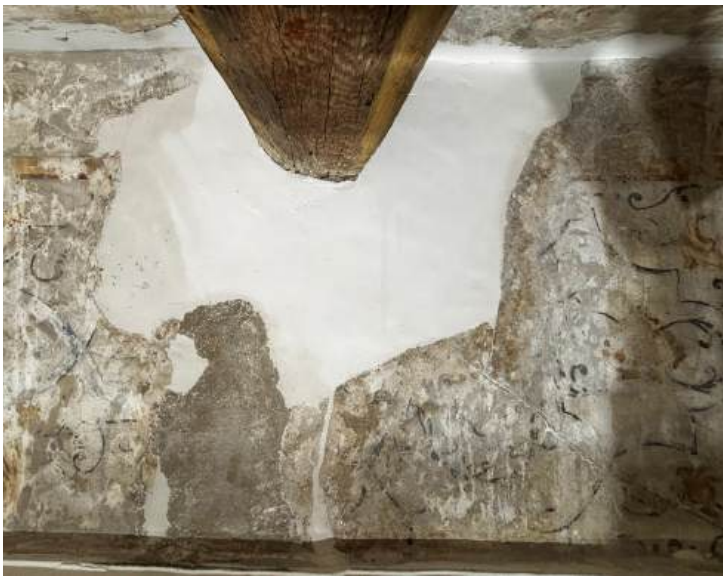


Fig.39 After cleaning

In the same period, the ceiling of Room 2 was also the subject of decorative reconstruction in areas where the ornamental painted motifs were entirely lost. The traditional *spolvero* method was used to transfer the missing designs, a technique with long-standing application in fresco painting and decorative reintegration. First, the surviving decoration was traced in pencil on translucent paper, which was then perforated along the outlines with fine pinpricks (Fig.40). This perforated tracing was placed over the damaged areas, and a linen pouch filled with dry pigment was gently tapped over the surface, producing a dotted outline on the plaster (Fig.41). The transferred dots were then joined to reconstruct the motif, refined with pencil, and subsequently reintegrated chromatically to complete the motif (Fig.42,43). This process involved applying transparent, water-thinned layers of paint, gradually building up color until the reconstructed design blended visually with the surrounding decoration. The intervention allowed for a more complete and harmonious reading of the ceiling decoration, while maintaining fidelity to conservation principles of reversibility, legibility, and aesthetic integration.

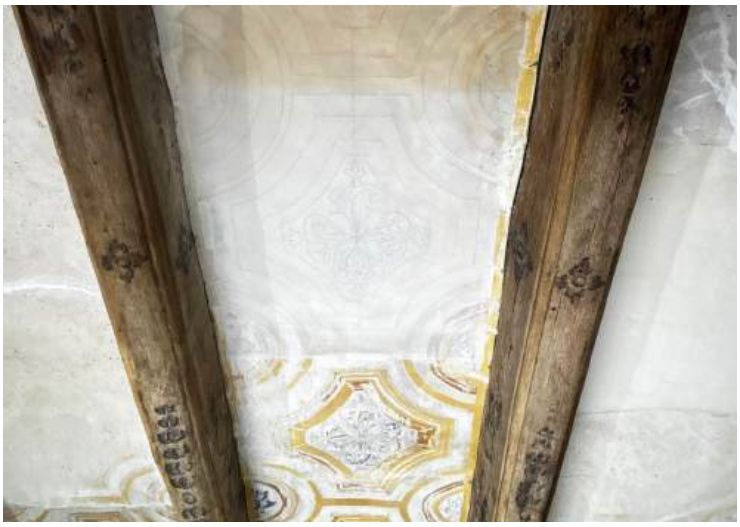


Fig.40 Tracing the designs on a translucent paper

Fig.41 Process of pouncing

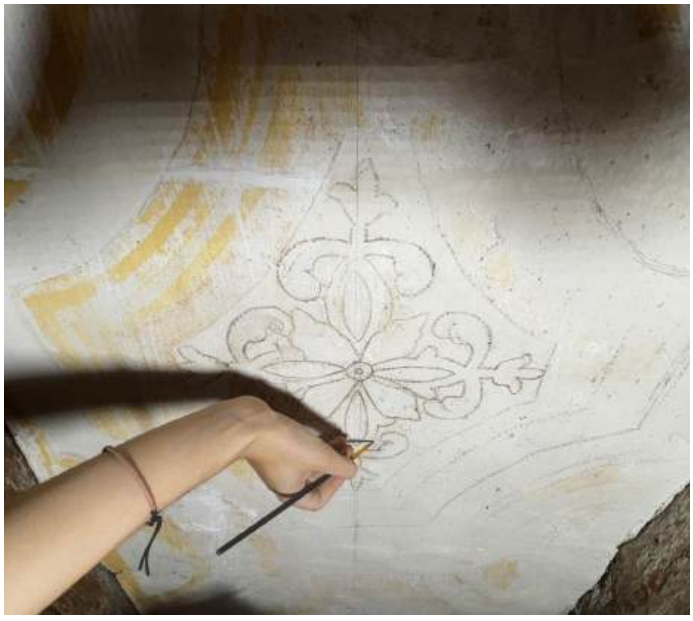


Fig.42 Redefining the points

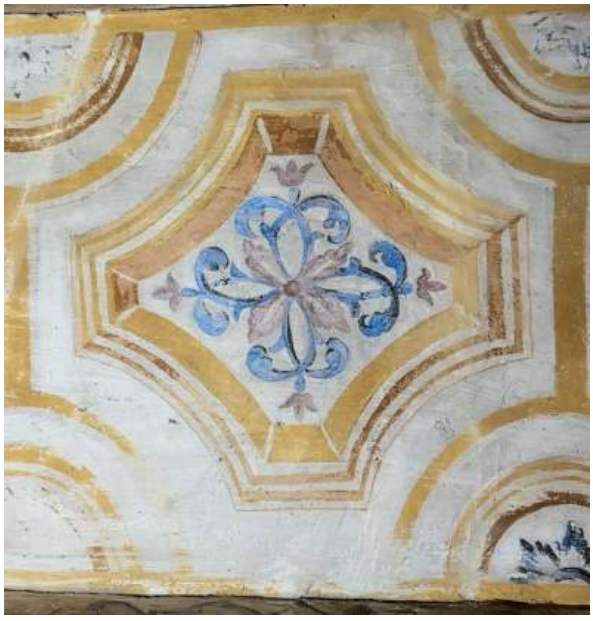


Fig.43 Painting in to complete the motif

ig.44 Before retouching

Fig.45 After retouching

Fig.44 Before retouching

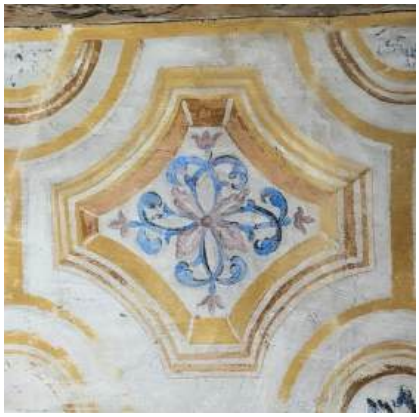


Fig.45 After retouching

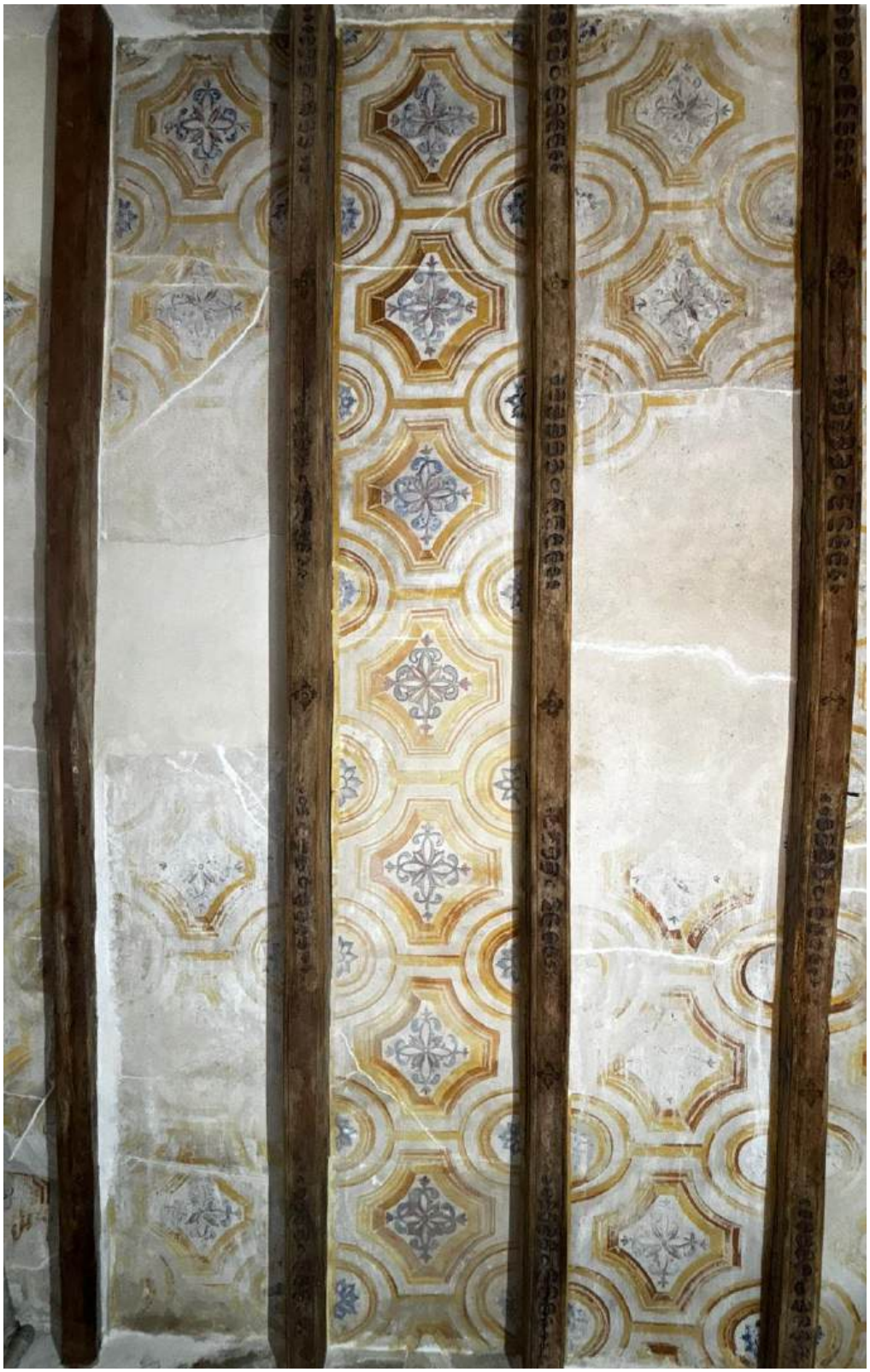


Fig.46 Re-integration and retouching of one entire phase of the ceiling

5. Conclusions and Recommendations

The conservation work carried out at Villa Masseria di Cacchiamo demonstrates the value of adopting a careful, methodical approach rooted in the principles of minimal intervention, respect for material authenticity, and reversibility. Through targeted cleaning, consolidation, and retouching, the decorative cycles in Rooms 1 and 2, particularly the mural paintings, stucco frames, and cornices, have been stabilized and visually reintegrated without compromising their historical integrity. The interventions not only improved the aesthetic legibility of the artworks but also reinforced their structural resilience against ongoing deterioration. The use of compatible materials, such as gesso for fillings, and scientifically tested products, such as Acryl 33 for consolidation, ensured a balance between effectiveness and future reversibility.

Nevertheless, the state of conservation of the villa continues to present vulnerabilities linked to environmental factors such as humidity, biological growth, and material incompatibility from earlier interventions. For this reason, it is strongly recommended that preventive conservation measures be prioritized moving forward. Regular monitoring of microclimatic conditions inside the decorated rooms, together with periodic inspections of the roof and drainage systems, will be essential to mitigate risks of water infiltration and rising damp. Cleaning campaigns should remain light and selective, avoiding aggressive methods, while further consolidation and retouching should always be preceded by diagnostic analysis to guide the choice of materials. Finally, comprehensive photographic and written documentation should continue to accompany each intervention, ensuring transparency and providing a solid reference base for future conservators.

In conclusion, the work carried out serves as a crucial step in the ongoing safeguarding of Villa Masseria di Cacchiamo’s cultural heritage.

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