

quaderni di assorestauro



YEAR08NR01
JUNE 2019

ARCHITECTURAL AND ARCHAEOLOGICAL RESTORATION: THE EXCELLENCE OF MADE IN ITALY

17TH-22ND JUNE 2019



17 JUNE
CASERTA
NAPOLI



18 JUNE
POMPEI



18
19 JUNE
NAPOLI



20 JUNE
PALERMO



21 JUNE
PIAZZA
ARMERINA



21
22 JUNE
SIRACUSA

Project supported by Mise, ITA - Italian Trade Agency & Assorestauro



ITALIAN TRADE AGENCY
ICE - Agenzia per la promozione all'estero e
l'internazionalizzazione delle imprese italiane



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INDEX

■ SPONSOR PRESENTATION

— PRESENTATION OF “ICE AGENCY”	4
— PRESENTATION OF “ASSORESTAURO”	5

■ WORKSHOP SESSION

CASERTA | 17TH JUNE

— REGGIA DI CASERTA HISTORICAL OVERVIEW - Assorestauro	6
— REGGIA DI CASERTA. RESTORATION OF SALA DELLE DAME AND SALA DI ASTREA - Studio Leonardo	12
— MATERIALS AND INTERVENTIONS ON THE PRINCIPAL FAÇADE OF ROYAL PALACE OF CASERTA - Kimia	18

NAPOLI | 17TH JUNE

— THE CHURCH OF S. MARIA DELLA SANITÀ. URGENT RESTORATION ON THE BELL TOWER - Minerva Restauri	22
— VILLA ROSEBERY. MONITORING AND CONSERVATION - Graphite, Assorestauro	26

POMPEI | 18TH JUNE

— PRESERVING, KEEPING AND TRANSFERRING CULTURAL HERITAGE TO THE FUTURE: A FOCUS ON RESTORATION AND ARCHAEOLOGY - B5	30
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NAPOLI | 18-19TH JUNE

— ITALIAN NATIONAL RAILWAY MUSEUM. PIETRARSA - Mapei	36
— VILLA PIGNATELLI: A NEOCLASSICAL HOUSE MUSEUM IN NAPOLI - Museo Pignatelli	40

PALERMO | 20TH JUNE

— THE STATEMENT OF THE PRESIDENT OF SICILIAN REGION, NELLO MUSUMECI	44
— VALORIZING PALERMO'S HERITAGE:	
■ The Botanic garden. Restoration of the Sculptural asset - Impresa Scancarello, Ibix ..	46
■ Church of Santa Maria degli Angeli “la Gancia”: The restoration of Vergine di Guadalupe Chapel - Impresa Scancarello	56
— DUOMO OF MONREALE: A MASTERPIECE OF MOSAIC ART	60

PIAZZA ARMERINA | 21ST JUNE

— THE ROMAN VILLA OF GERACE. A TREASURE TO BE DISCOVERED	62
— CONSERVATION AND MAINTENANCE OF THE TRICLINIUM OF LA VILLA ROMANA DEL CASALE - Assorestauro	64
— RESTORATION OF “CASALE DI PIAZZA ARMERINA” ROMAN VILLA - Cooperativa Archeologia	66

SIRACUSA | 21ST-22ND JUNE

— MANIACE CASTLE: THE RESTORATION OF A MILITARY ARCHITECTURE IN SYRACUSE - Kairos, El.En	72
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ITALIAN TRADE AGENCY

**ICE - Agenzia per la promozione all'estero e
l'internazionalizzazione delle imprese italiane**

ITA, Italian Trade Agency, is the Government Agency that supports the globalization of Italian firms, implementing the strategies of the Ministry of Economic Development.

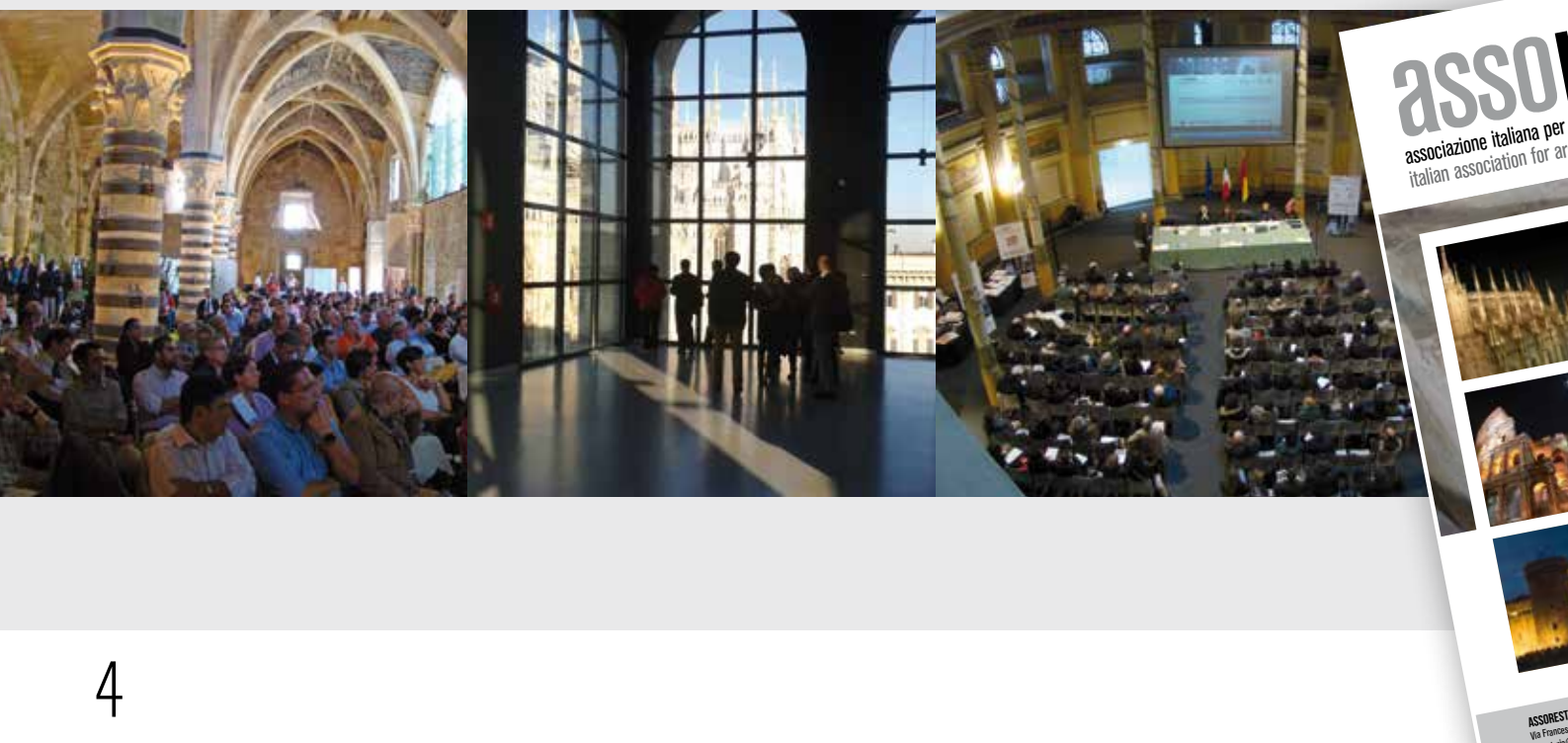
ITA helps to develop, facilitate and promote Italian economic and trade relations with foreign countries, focusing on the needs of SMEs, their associations and partnerships;

ITA assists Italian firms in their internationalization processes, in the marketing of Italian goods and services, while promoting the "Made In Italy" image around the world, and it is directly involved in the attraction of foreign direct investments.

ITA provides information, support and consultancy to Italian companies on foreign markets, promoting and fostering exports and cooperation in all areas – industry (consumer and capital goods), agricultural technology and agri-food, services, and training – with the aim of increasing and making more effective their presence on international markets.

ITA works closely with the Italian Regions, the network of the Italian Chambers of Commerce, business organizations and other public and private entities.

ITA headquarters is in Rome and operates through a worldwide network of 79 offices in 65 countries which act as "Trade Promotion Offices and/or Sections" of the Italian Embassies or Consulates.



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associazione italiana per il restauro architettonico, artistico, urbano
italian association for architecture, art and urban restoration

Project coordinator:
Andrea Griletto

WHO IS ASSORESTAURO ?

Established in 2005 as the first Italian association of manufacturers of materials, equipment and technology, suppliers of services and specialized companies, Assorestauro represents the Italian sector of restoration and conservation of material heritage. To date, it is the sole association and a reference in the domestic and international market for anyone willing to start working in the conservation sector in Italy, to be intended in its broadest sense, that is, as a synthesis of the various disciplines involved, of the professional specialists, of the available technology and of the growing business community. If examined as a whole, the sector accounts for a large market share and has a meaningful impact on tourism, industry and bioconstruction.

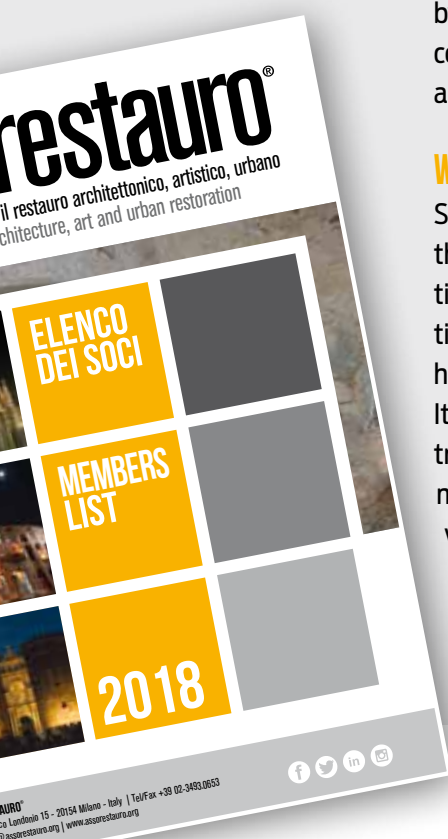
WHAT ARE ASSORESTAURO'S GOALS ?

Assorestauro is the National Trade Association for the Restoration Sector, representing manufacturers of materials, equipment, technology, specialist companies, designers and suppliers of services for analyses, surveys and diffusion. The Association offers its members information, assistance, advice and training both directly and through its partners, with a view to building a consistent and unitary orientation to the different sectors of the restoration industry at national and international level.

As a national association, Assorestauro is aimed at coordinating, protecting and promoting the interests of the restoration sector and it represents before the outer market, in Italy and abroad, the common positions for technical and economic issues, as well as image, by carrying out targeted activities in such relevant fields of the sector as information and communication, protection of common interests (economy, image, standards), research and development, promotion.

WHAT DOES ASSORESTAURO DO ?

Several activities aimed at promoting the professional skills in the restoration sector fall in the scopes of the Association. They include diagnostic analysis, design and on site execution, producing technology and materials, as well as contributing technological innovation, with the support of Institutions, Universities, Agencies for the protection of cultural heritage and ICE, the Agency for the internationalization and the promotion abroad of Italian businesses. This type of action includes both promotion in Italy (conferences and training seminars, trade exhibitions, courses and similar initiatives) and abroad (foreign missions, training, b2b encounters, restoration sites), where member companies are involved and offered the chance to study and penetrate foreign markets through projects co-sponsored by national and international bodies.







17 JUNE
CASERTA

Angeliki Chronopoulou
Assorestauro

REGGIA DI CASERTA HISTORICAL OVERVIEW

The Royal Palace of Caserta is a former royal residence located in southern Italy. It was constructed by the Bourbon Family as their main residence during their royalty in Naples. Being one of the largest palaces erected in Europe during the 18th century, in 1997, it was designated a UNESCO World Heritage Site. Having been described as “the swan song of the spectacular art of the Baroque, from which it adopted all the features needed to create the illusions of multidirectional space”, the Royal Palace of Caserta in terms of volume, is one of the largest royal residences in the world.

HISTORICAL FRAMEWORK

It was in 1750 when Carlo di Borbone (1716-1788) decided to build the Royal Palace of Caserta as the ideal center of the new kingdom of Naples that was now autonomous from the Spanish aegis. The site selected was the plain of Terra di Lavoro, previously dominated by the sixteenth-century Palazzo Acquaviva. The design of the Palace was commissioned to the architect Luigi Vanvitelli (1700-1773). The construction of the Royal Palace started in 1752. When Carlo di Borbone left the kingdom of Naples to reach Madrid, there was a delay in the construction of the Palace so that upon the death of Luigi Vanvitelli in 1773 it was still far from complete. Carlo Vanvitelli and other architects, completed the Royal Residence. It was in 1847 when the Throne Room was completed. The Royal Palace of Caserta remained in the property of the Bourbon family for over a century, from 1752 to 1860, when it passed to the Savoy. Afterwards, a ministerial decree attributed it to the land of the Italian State in 1919. Since 1926 and until 1943 the Palace housed the Italian Military Air Force Academy. On 1943 it was occupied by the Allied Armies. Today the Palace houses the Commission for the Environmental Architectural Artistic and Historical Heritage of Caserta.



VOLUMETRIC COMPOSITION

The palace of Caserta has a rectangular plan. Regarding its volumetric composition, it is composed of six main volumes, vertically developed in five floors in a three rows arrangement, with the internal spaces organized around the four symmetrically positioned cloisters.

BUILDING IN HARMONY WITH NATURE

The building complex is highly interrelated with the landscape in which is efficiently embedded, underlying the importance of the visual and spatial communication between the building and its surroundings, something undoubtedly achieved through the way the architect Luigi Vanvitelli conceived and designed the Palace. As the German artist Goethe had mentioned after visiting the Reggia di Caserta, *“the position of the building is of exceptional beauty, in the most lush flat of the world, but with extensive gardens that extend up to the hills and an aqueduct that leads to a whole river, which waters the palace and its surroundings, and its water mass can be transformed by pouring it on artificial rocks, in a wonderful waterfall”*. Fundamental component of Reggia di Caserta is the majestic access path. Composed of two main ramps separated via the water line mentioned above, leads to the double semicircle that forms the large Vanvitelli Square, from which the visitor can enjoy the majestic view towards one of the principal façades of the Palace.

The Royal Park

Inspired by the gardens of the great European residences of the time, it is a combination between the Italian Renaissance garden with the solutions introduced in the Versailles Palace. The works began in 1753 in parallel with the construction of Carolino Aqueduct. Only a part of the garden was realized by Luigi Vanvitelli and in 1773 when he died the aqueduct was finished but the fountains were still missing. The construction of the Park was completed by his son Carlo who simplified his father proposal, keeping though the basic compositional rhythm.



PRINCIPAL FACADES

Regarding the principal facades, they are made of brick and travertine. Both reflect the influence from the early classical style and are characterized by the vertical division into three parts with the bottom one to be differentiated in terms of construction material (ashlar instead of brick) and external finishing in order to give the impression of the “solid base” on which the Palace stands. The middle part is composed of 2 rows of rectangular windows with decorative marble frame. On the upper part stands an impressive composite order which acts as a closure, a penthouse which follows the classical principles of hierarchy, symmetry and openings repetitiveness, covered with a cornice with a series of balustrades on the top. The central part and the two corners of both principal facades partially extrude from the rest of the building, highlighting in this way the main entrance and four edges of the Palace, clearly defining its external boundary.

INTERNAL ORGANIZATION

Composed of 1.200 rooms the Palace of Caserta apart from the royal apartments was also designed to host the housings of the troops, the administrative offices, the chapel and the theater of fact. The imposing portico is the basic optical link between the building and the park. The internal grand staircase connects the lower and upper vestibules leading finally to the Royal Apartments. The design and internal decoration both reflect the so-called “interior unit” characteristic of the eighteenth-century architectural and decorative concept, while the composite furniture and small objects are manufactured and inspired from the 19th century style. On the upper vestibule, in front of the room of the Grand Staircase, there is the Palatine Chapel. The first floor of the palace hosted the apartments of the royal Bourbon Family. The queen’s apartments were arranged along the north-west wing, while the fourth quarter of the King and the Prince were located along the southern elevation. Nowadays the Museum of Historic Apartments develops along this last wing, and the visit route is divided into an 18th and a 19th century apartment, respectively.

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REGGIA DI CASERTA. RESTORATION OF SALA DELLE DAME AND SALA DI ASTREA

SALA DELLE DAME: STATE OF PRESERVATION

The intervention in progress in the vault of the Sala delle Dame, characterized by a splendid representation of the Rapture of Cephalus by Aurora on a cart drawn by putti realized at the end of the XVIII century by Fedele Fischietti and Filippo Pascale, became necessary following the partial detachment of the painted plasterwork of a window intrados. The surfaces were generally in a good state of preservation with the presence of partially-adherent surface deposits. Preliminary analyzes have led to the detection, in the lower part of the decoration just above the cornice, of a previous decoration very different from the current one: geometric motifs were visible with a puttino and a bird that allow to hypothesize a previous grotesque decoration. The overlap of the painting currently visible to the previous one and the lack of adhesion of the two layers can be identified as the main causes of the exfoliation phenomena of the pictorial film that have been identified in various areas, above all in correspondence of the lesions.

Overall, the painting has its own balance and maintains an excellent level of legibility, disturbed only by altered corrections (retouching) often in correspondence of old fillings and by the presence of some drips in the south-eastern part of the vault due to previous problems of water infiltration from the upper floors. Finally, detachments of the plaster from the support along the lesions were detectable.

The painting maintains an excellent level of legibility, disturbed by widespread alterations often altered in correspondence of old fillings and by the presence of some drips in the





south-eastern part of the vault, above the window, a tangible sign of previous problems of water infiltration from the upper floors. Lastly, we have identified detachments of the plaster from the support along the lesions.

RESTORATION WORK

Preliminary restoration tests have led to a first phase of dry cleaning from surface deposits by means of soft brushes and wishab-like sponges. The cleaning was performed in a localized manner and aimed at lightening the particularly annoying and considered unsuitable repainting, working with selectivity and sensitivity so as to ensure a balanced intervention; the incongruous retouches, having resulted from the tests carried out of easy removal because they are extremely water-soluble, have instead been removed with demineralized water.

The conservative intervention of deep and superficial consolidation (the pictorial film, apart from the localized exfoliation phenomena, did not present particular problems) is the cornerstone of the ongoing intervention, which consists of, the removal of incongruous fillings and the injection of mortars for restoring continuity between the supporting layers of the wall painting. In correspondence with the detachments of the intonachino from the underlying plaster, localized injections of low specific weight mortars were applied, preceded by the grouting of adjacent cracks and fissures with mortars specially formulated in accordance with the constituent material of the product. The cracks and fractures present were compensated with localized grouting by using locally formulated mortar based on slaked lime and appropriately selected inerts. For the exfoliation of the pictorial film, the works proceeded with localized micro-injections of appropriately diluted acrylic resin; this micro-emulsion has the advantage of being able to be used also in ethyl alcohol which, thanks to its volatility, reduces drying times and facilitates the adhesion of the separated flakes. In some limited areas, the works proceed with absorption wraps for the extraction of soluble salts, applying a layer of paper pulp and sepiolite with demineralized water, to interposition of Washi ("carta giapponese"), until completely dry. In order to provide a



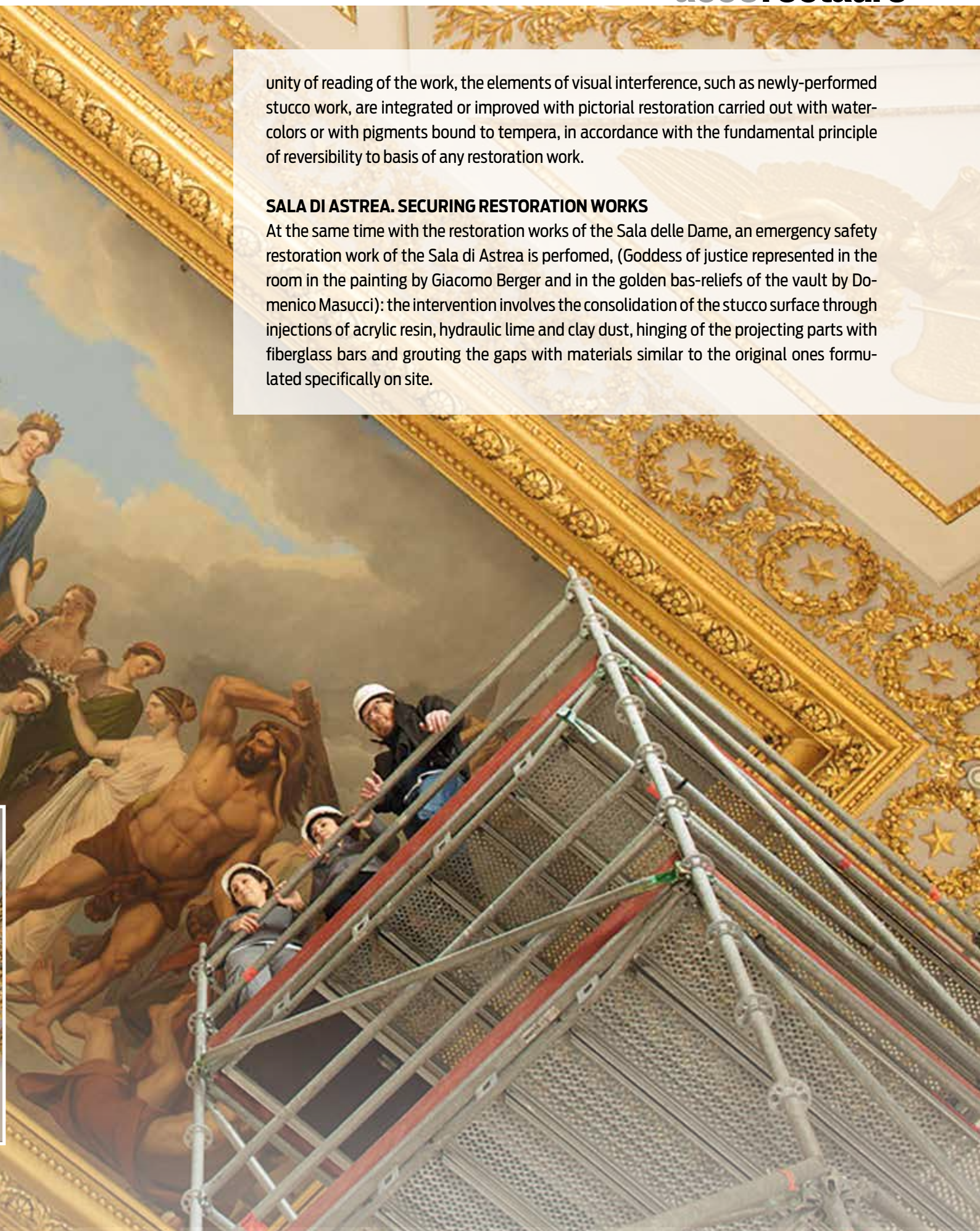




unity of reading of the work, the elements of visual interference, such as newly-performed stucco work, are integrated or improved with pictorial restoration carried out with water-colors or with pigments bound to tempera, in accordance with the fundamental principle of reversibility to basis of any restoration work.

SALA DI ASTREA. SECURING RESTORATION WORKS

At the same time with the restoration works of the Sala delle Dame, an emergency safety restoration work of the Sala di Astrea is performed, (Goddess of justice represented in the room in the painting by Giacomo Berger and in the golden bas-reliefs of the vault by Domenico Masucci): the intervention involves the consolidation of the stucco surface through injections of acrylic resin, hydraulic lime and clay dust, hinging of the projecting parts with fiberglass bars and grouting the gaps with materials similar to the original ones formulated specifically on site.



Enrico Jr Manes



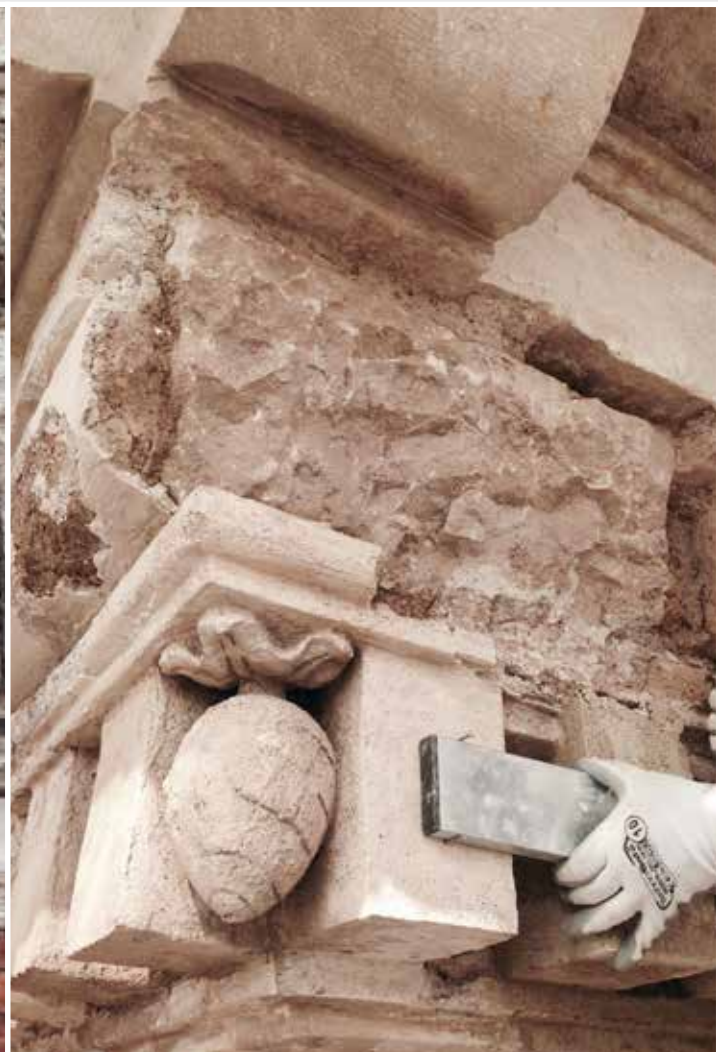
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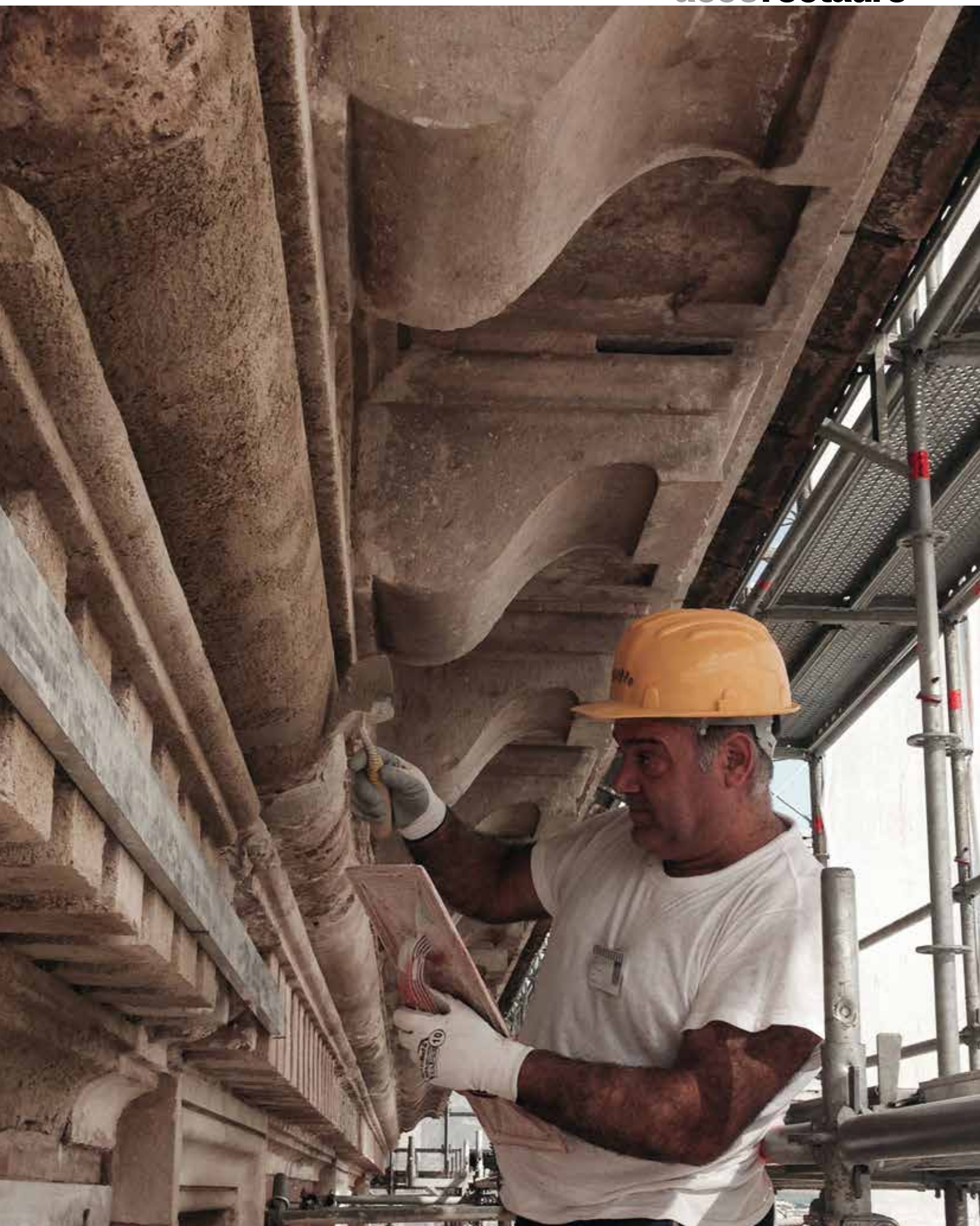
MATERIALS AND INTERVENTIONS ON THE PRINCIPAL FAÇADE OF ROYAL PALACE OF CASERTA

MATERIALS AND INTERVENTIONS ON THE PRINCIPAL FAÇADE OF ROYAL PALACE OF CASERTA

Since 2014 different interventions have been carried out on the external surfaces of this historical building. Vanvitelli SCARL has been the construction company in charge of works, under the direction of Arch. Gennaro Leva and the supervising of the Ministry of Cultural Heritage, Culture and Tourism. Main purpose of interventions has been the complete restoration of the existing masonry surfaces which show a high level of damage and degradation.

The initial stage of the interventions includes the proper preparation and cleaning, of all parts affected by mosses and mold as well as removing all the detached parts and deteriorated mortars.





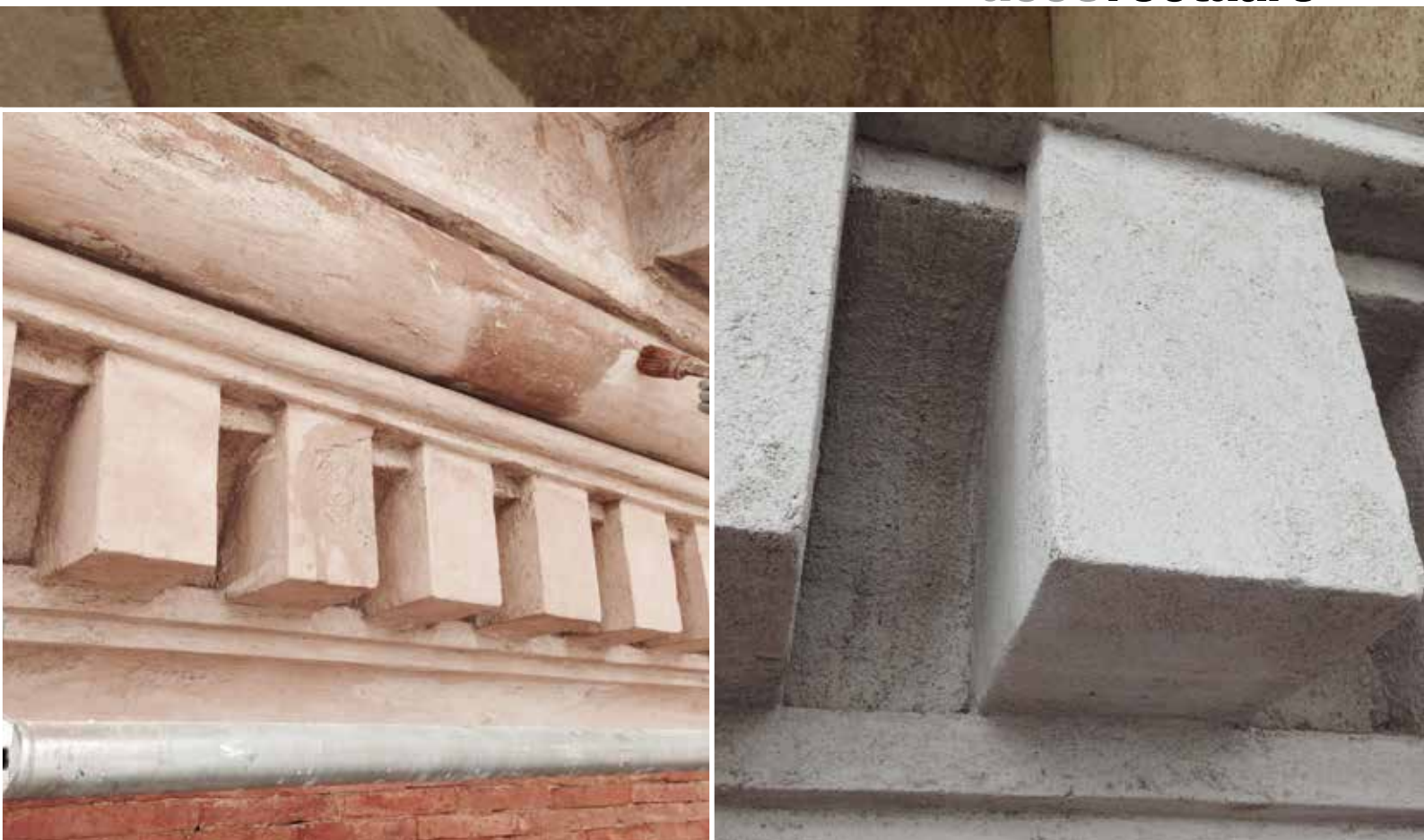


Once the support is ready to be worked, the following interventions are necessary for the proper restoration of the historical surfaces; reconstruction of moldings, plastering of existing moldings, repointing works.

MATERIALS USED

In order to restore existing parts with suitable and as much as possible compatible materials, the following Kimia products have been employed:

- **Limepor MT:** a ready-to-use mortar containing natural hydraulic lime NHL, natural pozzolans and inert siliceous materials with a maximum granulometry of 3 mm. Limepor MT has low water-soluble salts content and is physically and chemically compatible with the components used in historic masonry. In contact with water, the hydraulic lime reacts to form hydrated products that are extremely insoluble and very stable in terms of the chemical base.
- **Limepor FN:** a skimming lime-based mortar for plasters. Its colour is hazel-beige, it is ready to use, hydraulic lime-based, with natural pozzolanas and siliceous aggregates, having max granulometry of 1 mm. Limepor FN has a low soluble salts content, an excellent chromatic effect and it is physically and chemically compatible with the materials used in ancient masonry. In contact with water, the hydraulic lime reacts to form hydrated products that are extremely un-soluble and very stable in terms of chemical base.



17 JUNE
NAPOLI

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RESTAURI

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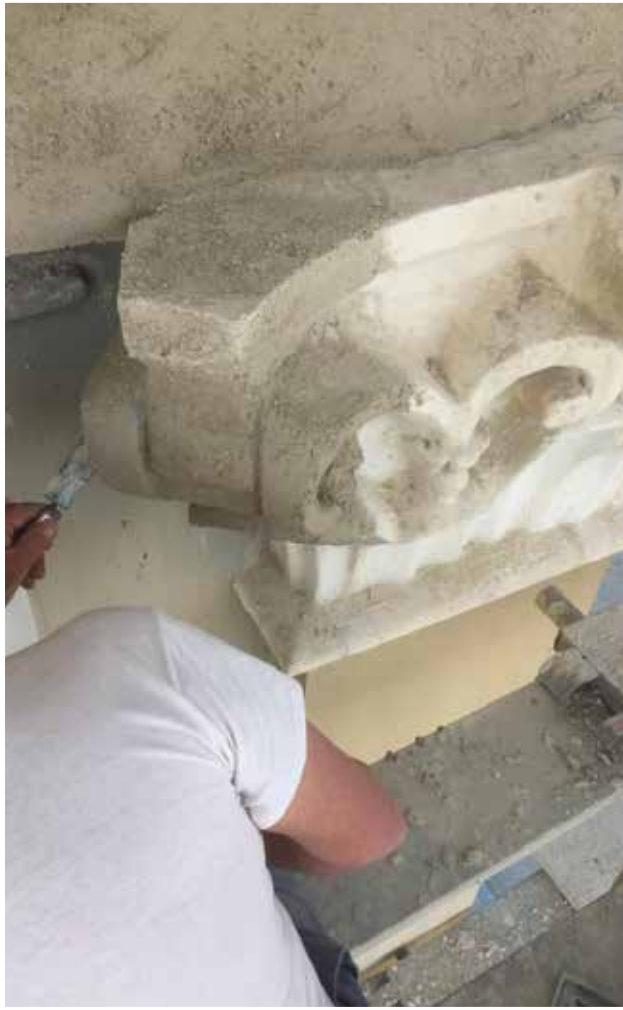
THE CHURCH OF S. MARIA DELLA SANITÀ. URGENT RESTORATION ON THE BELL TOWER

The church of S. Maria della Sanità is located in the Naples' historic center, in the Sanità district, best known because here a very important comic actor in the Italian cinema scene was born, Totò. The construction site is part of a more extensive project of city revival and recovery of the entire neighborhood, which began with the works and events for the fiftieth anniversary of the actor's death.

The basilica's construction began in 1577 and ended in 1612 with the building of the 52 meters high bell tower structure.

The urgent restoration entrusted to Minerva Restauri aims above all at consolidating the octagonal attic side and the domed roof, both damaged by a lightning. So, first of all, the perimeter scaffolding was built for the bell tower entire height, consisting of several additional elements due to the presence of two cornices at different heights. The area which needed intervention most was the summit area of the bell tower. During the various inspections the state of degradation was noted in the waterproofing, plasters and chains used in previous consolidation interventions, in addition to the presence of shrubs rooted below the sheathing.





The Doric, Ionic and Corinthian capitals, placed on the four edges of the bell tower at different heights, present a diffuse cracking state with the risk of decorative elements' partial detachment. Therefore, from the general verification of the structure, it emerged the need to perform a series of interventions aimed at the structural recovery of the entire bell tower, concerning above all the restoration on the masonry with the reinsertion technique in the areas damaged by lightning and by structure's settlement. After static checks, it was also considered the need to integrate the consolidation interventions on two levels of the structure with two other hoops of stainless-steel cables contrasted with steel plates. Widespread consolidation with pultruded ribbed fiberglass bars sealed with epoxy resins concern numerous elements, such as capitals decorations and decorative cornices. On the facades, due to the state of degradation of the plaster, it will be removed for an area of about 450 square meters, and then restored with materials strictly based on pozzolanic lime. Finally, the entire structure will be equipped with an atmospheric discharge protection system. Works will be completed with painting.



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VILLA ROSEBERY. MONITORING AND CONSERVATION

Extended over an area of approximately 66.056 m² the park of Villa Rosebery is situated in Posillipo, almost 40 meters above the sea level. The history of the Villa dates back to the early 19th century when the Austrian Officer Giuseppe De Thurn decided to keep the largest amount of the territory devoted to agricultural purposes, while on the rest he built a small residence with a private chapel and a garden. In 1820 the princess of Gerace and her son bought the whole property and commissioned to transform it from a predominantly agricultural land to a residential villa. The state of the Villa at that time resembles the one of today.

The next decades several changes in ownership occurred, with the most important in 1897 when Lord Rosebery bought the property and for a short period turned it into a private and secluded place, mostly visited by scholars. In 1932 the property was transferred to the Italian State which changed its use to that of a royal summer residence. Since 1957, Villa Rosebery is used as one of the private offices of the President of the Republic.





LA PALAZZINA BORBONICA

Villa Rosebery could be mentioned as one of the main points of reference for neoclassicism in Naples. The main facade of the Bourbon house could be characterized as relatively “simple” and “severe”, compared to the one towards the garden which is enhanced by the elegant portico with Ionic columns, used both for aesthetic and structural purposes since it supports the balcony of the main floor. The former agricultural character of the property is still visible through the themes of agriculture and vineyards found on the terrace surrounding the building, the balustrades and the finely carved marble vases. Similarly, under the portico still exists the frieze, made in stucco, revealing the spirit of the place. On its left is presented an animated procession chaired by Dionysus, while on the right is decorated with newts and sea horses, recalling the sea located nearby.

LA GRANDE FORESTERIA

The main façade of the building is dominated by the centrally located portico with Ionic columns of pure neoclassical style and the terrace located on the top of it. The large square in front of the building is decorated with four sculptures representing dogs in cast iron. The atrium is furnished with marble consoles and chandeliers in white and blue majolica with rich decorative elements. Regarding the rear elevation, is characterized by the arches with the large paved terrace in majolica on top.





The two houses of villa Rosebery today contain a catalog of valuable works of art, in need of constant maintenance. The conservative monitoring of works of art, including the furnishing elements, is a fundamental step in preventing their degradation.

The aim is to monitor the exhibition and conservation areas at all times of the day, guaranteeing the control of the medium-sized paraxes involved in the deteriorating processes of the works of art. The interactions that are established between the artefacts and the surrounding environment are very complex. Inadequate conditions can lead to serious “collateral” effects such as discoloration, oxidation, color changes, color detachments, loss of tension on the canvas, phenomena of hydrolysis of organic materials, xylophagous attacks, crumbling of mortars, fractures in wood; often irreversible damage on which the restorer must then intervene with extreme care and professionalism.



18 JUNE
POMPEII

Francesca Brancaccio
Architect, Ph. History,
Specialized in Restoration
of Monuments



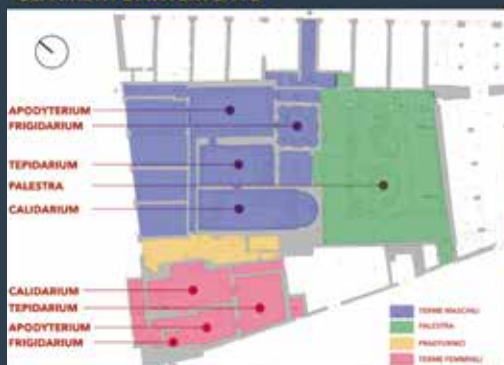
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PRESERVING, KEEPING AND TRANSFERRING CULTURAL HERITAGE TO THE FUTURE: A FOCUS ON RESTORATION AND ARCHAEOLOGY

FORUM BATHS AND GYMNASIUM IN POMPEII

This project is in the context of the Major Project Pompeii, great collective commitment and example of good practices and high executive skills. Pompeii - the largest archaeological site in the world - has been a UNESCO site since 1996 (it provides a complete and vivid picture of society and daily life during the Vesuvius eruption of 79 a.C., without parallel anywhere in the world). It possesses a rich and varied artistic heritage: mosaics, decorated surfaces, frescoes and stuccoes, decorative architectural elements. The project aims to arrest degradation, secure, removing the causes that threaten the preservation of items and that make some areas impossible to use of the so-called 'Gymnasium' (insula n. 5 on the north side of the Forum in the Regio n. VII). It forecasts some demolitions of concrete structures, as well, together with the project of new structures. The site has been object of scientific studies from all historical, archaeological, geological, material, architectural, botanical and structural points of views, with attention to the use for touristic visits and to planned maintenance for the future. The in-depth and wide-ranging investigations allowed to lead to a conscious design, based on the initial "recognition" of the values, and aiming at

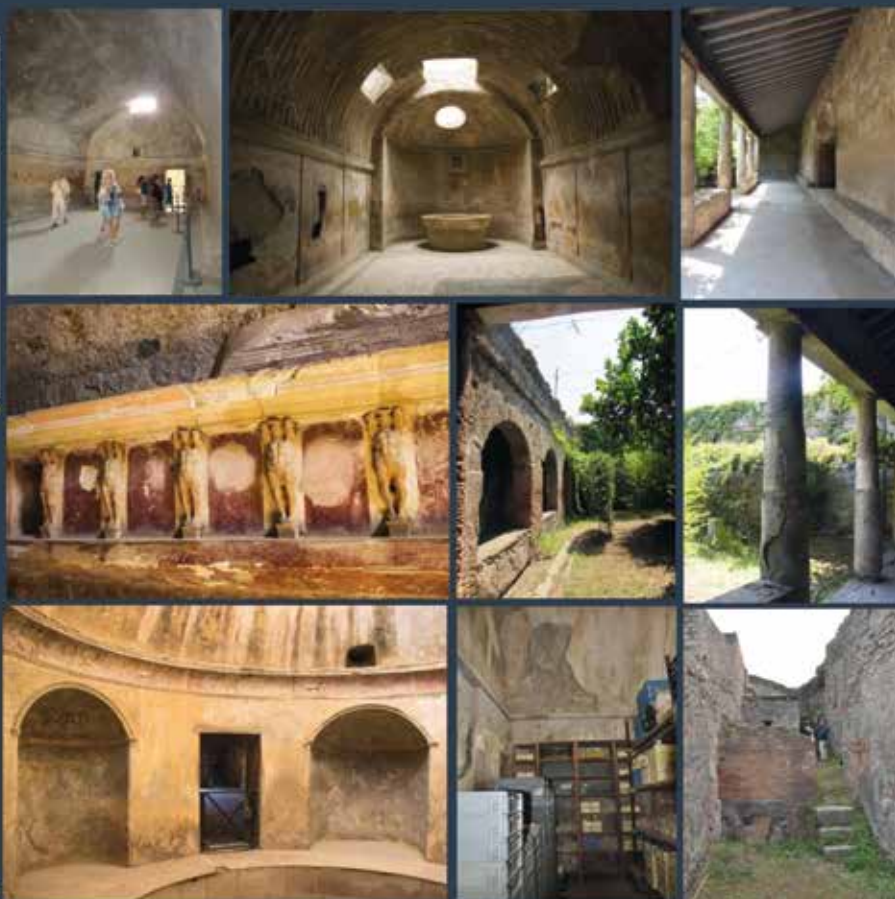
GLI AMBITI DI INTERVENTO



Terme del Foro : Planimetria



Terme del Foro : Aerofotogrammetria



This will allow, once restoration will be finished, to have a complete database with detailed graphic references, for monitoring and scheduling of maintenance activities.

The figure consists of four horizontal cross-sections of the Temple of Apollo at Side, arranged vertically. Each section shows a different part of the temple's structure, from the podium to the roof. The sections are labeled with numbers 1 through 4, corresponding to the sections in the figure. The sections show the internal structure of the temple, including the columns, the roof, and the podium. The sections are drawn in a detailed, technical style, showing the construction of the temple.

[illegible]

The new structure for the roof confirms the same “shape”, putting new beams in the walls within the existing holes, only by changing the structure. Three different solutions were proposed: wood (no glue-lam but true chestnut timber), steel or Pultruded FRP Structural material. The wooden solution was finally chosen by the Superintendence of Pompeii because considered as more similar to other cases already performed in Pompeii. Some devices were adopted to improve the accessibility and the quality of the touristic visit, with new structures, in steel elements, multimedia space, where tourists can acquire information, in different foreign languages and explained in Braille on a tactile map.

INSULA OF CHASTE LOVERS

The second case study is linked to the restoration project of the insula of Chaste Lovers, located in the central district of Pompeii, the Regio IX (nine), with access from via dell'Abbondanza, one of the principal street in ancient Pompeii. The block extends over an area of approximately 4.000 square meters: a bakery and a shop connected to it, together with some houses (“Primo and Secondo Cenacolo Colonnato). Some rooms probably belong to a single real estate unit, the House of the Painters at Work. Another residential unit is the house of the Chaste Lovers, with its frescoes and mosaics.

The insula has come to light for the first time in the early twentieth century. In 1943 it has been partially bombed and destroyed by Allied Forces, and it has been then restored through wide reconstructions. The last excavation and study activities date back to 1980: at this time the area was protected with provisional roofing systems, that nowadays still cover the entire surface of the insula, which is closed to public from many years.

Five different fields of actions were defined in the project:

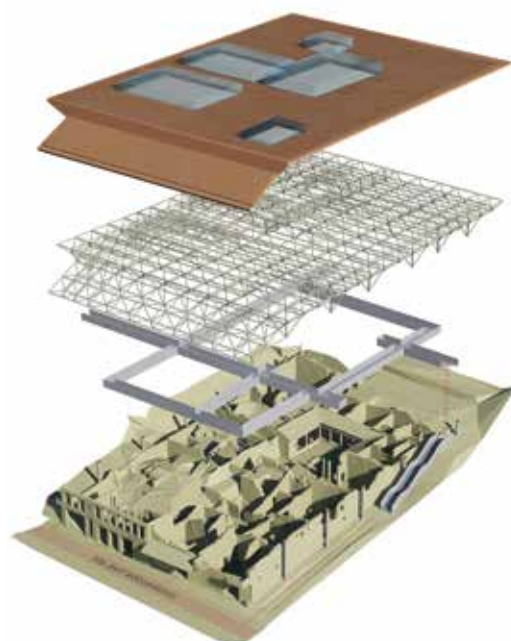
- _ coverage;
- _ consolidation of fronts of excavation;
- _ archaeological excavations;
- _ restoration and walls securing;
- _ accessibility and valorization of the site.

All aspects of the project are closely connected to each other, not only in terms of restoration choices, but also of operational steps.

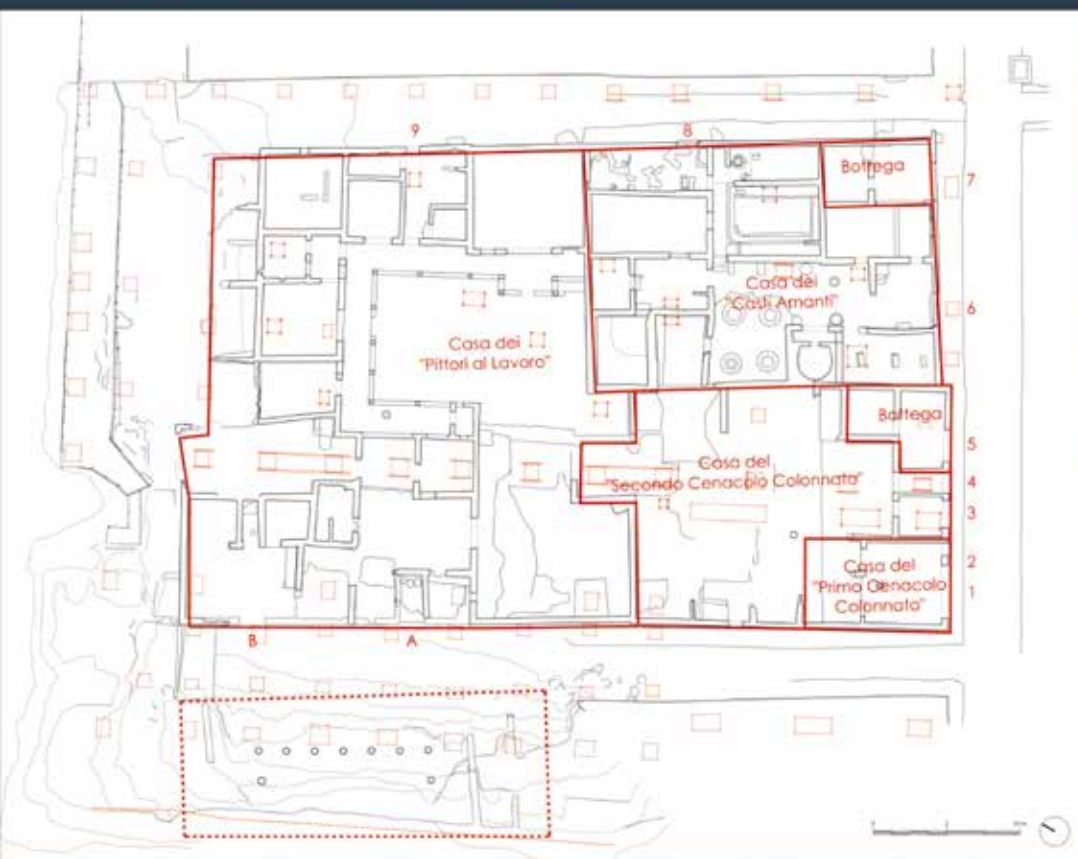
The project is based on the principles of minimal intervention, reversibility, impact control, compatibility with the context and among materials, and “polite” possibility of distinguishing the intervention.

The existing provisional cover today is a patchwork of different sheets (top view) and, from the inside is a disordered dense forest of metallic pillars, having in many cases also the function to hold collapsing walls.

Structural investigations were made on the exist-



DESCRIZIONE DELL'AREA



Planimetria dell'Insula dei Casti Amanti con individuazione delle unità edilizie



ing elements of the cover, revealing that they can't assure safety conditions anymore.

The roof has to be replaced by a studied and designed new cover.

The new designed roof will be a definitive one, and it will help to keep the conservative balance of the archaeological structures and decorations.

It also meets the needs of preservation and improving of the accessibility at the insula.

The new roof has a reduced covered surface, conceived as a studied articulation of layers in relationship with the rhythms, the geometry and the spatiality of the ancient walls and the rooms below, even considering the relationship between covered and open parts. The relation with the existing red clay roofing on neighbor domus is evoked through the polite suggestion of aluminum coating in a red color, similar to the color of tiles covered areas. The archeological open spaces, which correspond to the atrium or the courtyards, are covered by glass panels, that suggest the idea of "open sky" while providing protection to the underlying elements. The coverage is based on a metallic reticular spatial structure, with tubular rods and spherical nodes. The supports and foundations were designed and calculated in order to minimize the number and the dimension of the columns, reduced to the overall number of 12 (6 per side), placing them outside the insula, along the sidewalks of the western and eastern streets. The punctual foundations were positioned in already existing cavities. Refined calculation permitted to limit their maximum dimensions. The positioning of seismic isolator on the head of pillars has contributed to a significant reduction of the size of

the supports and foundations. Some further archaeological excavations were forecasted in order to secure the areas and the structures. Excavations will also achieve scientific goals, as research activities aimed at knowledge, study and documentation of archaeological layers and structures. The insula is in a rather good state of conservation, even if abandoned for years. This demonstrates the conservative efficiency and conservation benefits of the cover, which has protected walls and decorations from water action, direct solar irradiation, and extreme heating and cooling phenomena.

The archaeological walls - since they have no longer horizontal elements - do not have structural function, they must only fulfil their own stability standards. In the verifications, walls have then been considered as elements to be protected only under static conditions, without considering the action of the earthquake on them.

An accurate diagnostic campaign on archaeological structures has allowed to find out the quality of the structures and the mechanisms of ongoing disasters and their causes.

Walls with critical "static" problems will be assured with new external support structures in stainless steel, according to:

- _ low visual impact;
- _ limited extension within the room;
- _ high durability of elements.

Fruition and valorization

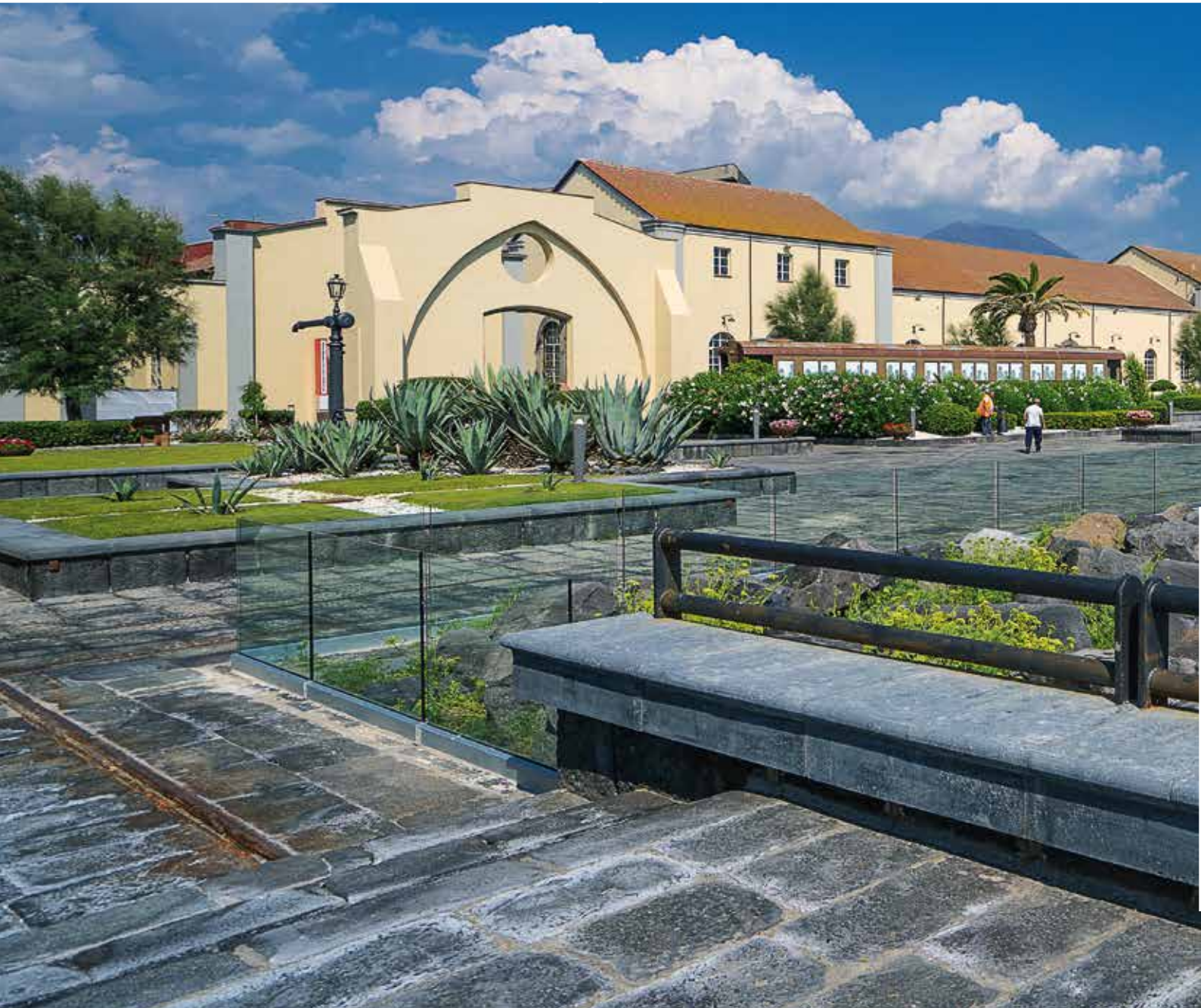
The project of the Chaste Lovers insula also focuses on the fruition and valorization of archaeological cultural heritage. In Pompeii touristic paths follow a "domestic" approach, dropping the visitor into a daily life dimension. This type of visit might sometimes contrast with the conservative nature of archaeological artifacts, which remain a priority. In the Chaste Lovers insula some rooms might not be visited by tourists in order to prevent their destruction. The project forecasts therefore a suspended pathway, in order to allow the visit of these





spaces without interfering with them. This approach enables to develop the visit of the archaeological heritage into a “museographic” way, and allow visitors to understand more, implementing their awareness of historical-aesthetic values. The two ways are complementary. The insula of Chaste Lovers can be approached using the original path, by entering from Via dell’Abbondanza which is integrated by the footbridge, suspended from the roof, proposing a different view from the top. Both paths are opened to people with disabilities.





18 JUNE
19
NAPOLI

ITALIAN NATIONAL RAILWAY MUSEUM. PIETRARSA

Overlooking the Gulf of Naples, the museum contains a unique collection of historical railway carriages and locomotives



restoration@mapei.it
www.mapei.com

The first stretch of the Italian rail network was inaugurated on the 3rd of October, 1839 by King Ferdinand II of the Two Sicilies. The stretch was a little more than 7 km long and the journey from Naples to Portici took 11 minutes, with passengers travelling in two trains designed by the engineer Armand Bayard de la Vingtrie, based on a prototype of the Rocket locomotive designed by George Stephenson. The first of 7 workshops specialised in the building, maintenance and repair of rail stock was built in 1842 in the Pietrarsa area of Portici. Following the Unification of Italy, the workshops were taken over by the Italian Government and continued their activity as a building, maintenance and repair centre for the large steam trains in use at the time. The workshops were finally closed down in 1975 and, in 1989, to celebrate the 150th anniversary of the Italian railway network, the Italian National Railway Museum was inaugurated inside the workshops complex.



RESTORATION AND REDEVELOPMENT PROJECT

The National Railway Museum in Pietrarsa has been given a new lease of life: on the 31st of March, 2017, the President of the Italian Republic, Sergio Mattarella, inaugurated the newly-restored museum complex. The complex is made up of seven structures extending over an area of 36,000 m², of which 14,000 are covered. Inside the museum there are 55 steam trains, Fiat Littorina trains and carriages, models of trains, a large, 18 m-long model called "Trecentotreni" (three hundred trains), the official state carriage of the President of Italy, an imposing statue of King Ferdinand II and the Liberty-style royal stateroom with its pure gold ceiling. After 20 years of deterioration caused by the salty air and a lack of maintenance, around 15 million Euros were invested to restore the museum. The most significant work included restoration work on the buildings where the trains and carriages are displayed, new lighting systems, refurbishment of the stone floors outside and around the museum, the installation of a new glass parapet along the promenade, restoration work on the nineteenth-century, cast-iron platform, a new layout for the gardens, restoration work on the building and platform at the train stop in Pietrarsa, restoration work on the large cast-iron statue of King Ferdinand II, refurbishment of the convention centre and a restyling of all the internal areas.

SAFE FAÇADES BY MAPEI

Mapei products were used for the macro-porous dehumidifying render and the coloured coatings on the façades. The first step was to remove all the old, deteriorated render right down to the masonry underneath. This was then washed with water to remove all the soluble salts, dust, grease, efflorescence and any loose material. Any gaps or breaks in the





masonry were repaired using MAPE-ANTIQUE ALLETTAMENTO salt-resistant mortar and other building materials, such as stone and bricks, with characteristics as similar as possible to the original materials. Mapei Technical Services recommended MAPE-ANTIQUE RINZAFFO salt-resistant, breathable, lime and Eco-Pozzolan-based scratch-coat mortar used as a base layer before applying MAPEANTIQUE MC macro-porous, dehumidifying render which is highly resistant to various chemical-physical aggressive phenomena, such as the presence of soluble salts in the surrounding air. The surfaces above this level were treated with a system made up of MAPE-ANTIQUE RINZAFFO and MAPE-ANTIQUE INTONACO NHL transpirant base render. After saturating the substrate with water, a 5 mm thick layer of MAPE-ANTIQUE RINZAFFO mortar was applied over the entire surface to improve adhesion of the render and slow down the transfer of salts towards the de-humidifying render during the first few days of curing while it was still too “weak”. Then, starting from the lower part of the masonry, MAPE-ANTIQUE MC MACCHINA macro-porous dehumidifying render was applied to form a layer at least 20 mm thick. While the dehumidifying render was curing, any areas directly exposed to the sea air were protected with sheets to limit as much as possible the amount of salt deposited on their surface. Once the render was fully cured, the surface was protected and painted with SILANCOLOR BASE COAT, a water-repellent, coloured siloxane undercoat with good filling and defect-covering properties, and SILANCOLOR TONACHINO, a water-repellent, transpirant, siloxane plaster with high filling properties, in the colour specified by the client.

[From Realtà Mapei 153]



Denise Maria Pagano
Director of the Museo Pignatelli
Rosanna Naclerio
Vice Director of the Museo Pignatelli

VILLA PIGNATELLI: A NEOCLASSICAL HOUSE MUSEUM IN NAPOLI



www.polomusealecampania.beniculturali.it

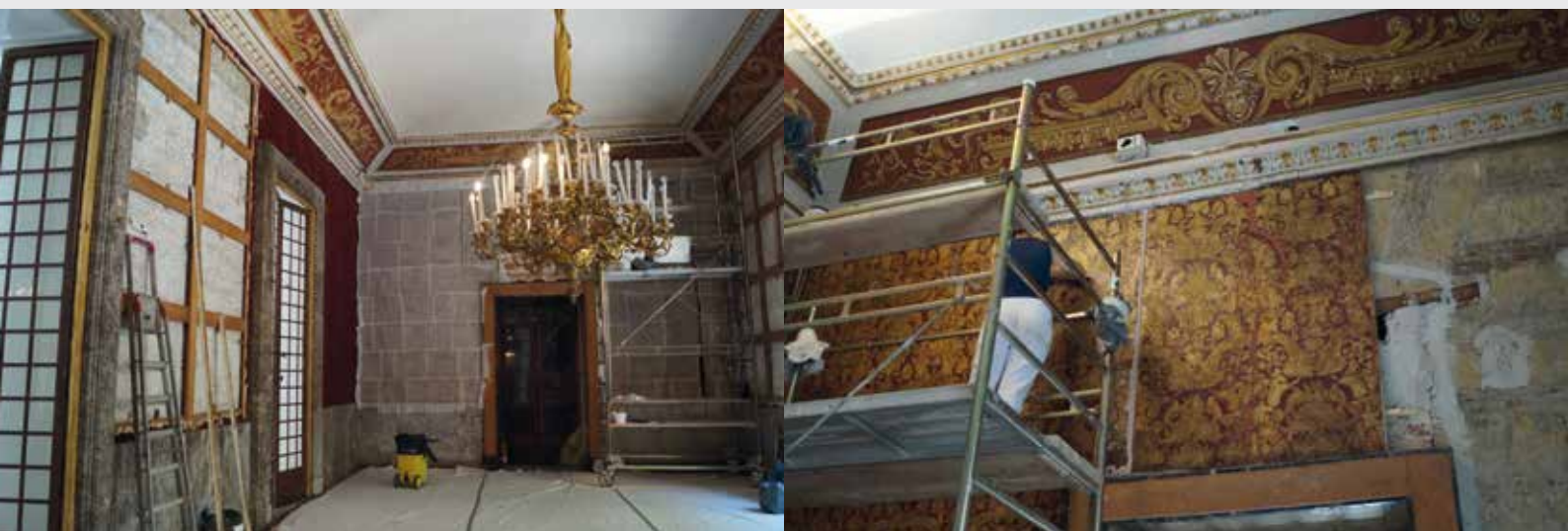
In December 2015, the Diego Aragona Pignatelli Cortes Museum was reopened to the public after a complex restoration that involved the Villa and the Park. The works were carried out thanks to the contribution of the Campania Region with the Regional Intervention Plan POR Campania F.E.S.R. 2007 2013, Axis I - Operational objective 1.9.

The restoration made it possible to restore the atmosphere and the splendour of the rooms with the original furnishings of the Villa, one of the most important models of Neapolitan neoclassical architecture, a fine and refined example of a museum house. The splendid nineteenth-century residence was designed, starting from 1826, by Pietro Valente, an apprentice architect of Niccolini, commissioned by the English nobleman Sir Ferdinand Acton. The villa is immersed in the romantic garden realized by the Florentine Guglielmo Bechi, who kept the natural morphology of the land by drawing two side paths that surround the parterre slightly sloping, made suggestive by the presence of rare and centennial plants, and animated by the circular fountain with the Triton statuette.

The building is characterized by a two-storey building, with two lower wings terminating in “temples” connected by a double row of neo-Roman columns.

In 1841 the villa, bought by the German banker Carl Mayer von Rothschild, was modified and embellished, according to the requirements of a very high status, by the French architect Claret and later by Gaetano Genovesi. After the Unification of Italy, the residence was sold to Prince Diego Aragona Pignatelli Cortes, Duke of Monteleone, who lived there with his wife Donna Giulia Cattaneo of the Principi di San Nicandro. The construction of small buildings in the garden, such as the Swiss Chalet, the Neo-Gothic Tower and the Serra, most probably dates back to this period.

After the death of the prince the villa was inherited by his nephew Diego who, with his wife



Rosa Fici of the duchy of Amafi, a woman endowed with great personality and lady-in-waiting of Queen Margherita, made it a real worldly living room, where they met aristocrats and rulers from all over Europe. It was Princess Rosina Pignatelli who, in 1955, donated the villa to the Italian State. The villa, subjected to restoration work, was opened to the public as a museum in 1960.

Testimony of the princess's versatile interests are the rich book collection, the large collection of decorative arts and the collection of LPs of opera and classical music that make up the museum's permanent heritage.







In the historic apartment, on the ground floor, a splendid example of leather wall embossed with gold pastel was restored in the Library, which was in a very poor state of preservation. The wall panel, fixed on wooden frames, was detached, subjected to a lining, cleaning, fixing and pictorial integration and placed on the wall on special metal expansion frames. The painted terracotta floors have also been integrated and restored to their original design, and the chandeliers, sconces and candelabras have been completely dismantled, cleaned in the glass parts and in the metal ones. A restoration also involved the ancient shelter that covers the staircase leading to the villa.

On the first floor, after more than fifty years, some of the family's private rooms have been reopened to the public: the prince's bathroom with the beautiful Carrara marble basin decorated with the Pignatelli coat of arms which was restored for the occasion, the Studiolo of the princess and her boudoir, where Rosina Pignatelli was customary, in the last years of her life, listening to the records she collected with very few friends. The furnishings, paintings, sculptures and large decorated vases that have been preserved for a long time have then been relocated, testifying to the eclectic taste of the time.

In the rooms of the first floor destined for exhibition spaces, a new air conditioning and lighting system was created, aimed at presenting the photography exhibitions as part of the Casa della Fotografia project.

Irrigation and lighting systems were built in the park and the old tennis area and the Swiss chalet have been restored. During the extraordinary maintenance of the Park, numerous arboreal essences have been dwelled.

In the northern part of the garden, the Carriage Museum, named after the Marquis Mario D'Alessandro di Civitanova, located in the old stables, is a real rarity in the field of collecting. In the spring of 2015, the Museum, with the end of finishing touch, reopened all its rooms to the public, after a long restoration carried out with different funding. In the current setting, a series of multimedia workstations located along the route offer visitors different levels of depth and for the very young, a series of interactive themed games.

As part of the enhancement program, the museum has been equipped with a free wifi network. Moreover, a fast "mobile application" has been created for IOS and Android devices to allow visitors to reach the practical information on the museum and the entire exhibition space, enjoying a story with texts and images identifiable on multimedia maps.





20 JUNE
PALERMO

FRUIZIONE E VALORIZZAZIONE BENI CULTURALI SICILIANI

Dichiarazione presidente della Regione siciliana, Nello Musumeci

“I luoghi di cultura devono assumere non solo il ruolo di custodi della memoria, ma anche di luoghi di aggregazione. In questo senso, un ruolo importante lo può svolgere l’affidamento dei servizi aggiuntivi ai siti. La creazione di reti tra soggetti pubblici e privati ottimizzando la governance del patrimonio artistico è infatti la chiave di volta per il riscatto culturale di questa Regione. Stiamo andando nella giusta direzione: il numero dei visitatori dei siti culturali in Sicilia sta registrando un trend positivo passando da un milione e 900mila visitatori del 2014 ai 5milioni del 2018 e con un 2019 che già registra un ulteriore incremento.

Un risultato che ci incoraggia e che ci lascia ben sperare soprattutto alla luce dell’istituzione dei nuovi Parchi archeologici regionali, che sono dotati di autonomia gestionale e amministrativa che consente loro di mantenere sul territorio gli introiti e destinarli a ricerca, scavi, miglie dei siti e investimenti. In questo senso l’incremento delle aperture al pubblico nei giorni festivi, le visite serali e una ricca e qualificata offerta di spettacoli all’interno dei siti, rappresentano un valore aggiunto che i turisti hanno dimostrato di apprezzare. Il quadro si completa con la massima attenzione verso la tutela del ricco patrimonio culturale dell’Isola, che si concretizza anche con la messa in sicurezza dei siti a torto considerati minori e che, con opportuni interventi di recupero e restauro, saranno restituiti alla pubblica fruizione. Una grande sfida ci aspetta nella convinzione che coniugare il concetto di Beni culturali al concetto di sviluppo può e deve essere il binomio vincente per la rigenerazione della Sicilia nel segno di un nuovo governo della cultura”.





FRUITION AND VALORIZATION OF SICILIAN CULTURAL HERITAGE

The statement of the President of Sicilian Region, Nello Musumeci

“Places of culture must assume not only the role of custodians of memory, but also of places of togetherness. In this sense, an important role can be played by the assignment of additional services to sites. The creation of networks between public and private subjects and optimizing the governance of the artistic heritage is in fact the key to the cultural redemption of this Region. We are going in the right direction: the number of visitors to cultural sites in Sicily is registering a positive trend going from one million and 900.000 visitors in 2014 to 5 million in 2018, and with 2019, a year that already recorded a further increase.

A result that encourages us and gives us great hope especially in light of the establishment of the new regional archaeological parks which are endowed with managerial and administrative autonomy that allows them to maintain income on the territory and allocate them to research, excavations and site improvements and investments. In this sense, the increase in public openings on public holidays, evening visits and a rich and qualified offer of exhibitions inside the sites represent an added value that tourists have shown to appreciate.

The picture is completed with the utmost attention to the protection of the rich cultural heritage of the island, which also materializes with obtaining the safety of the sites wrongly considered as minor and which, with appropriate recovery and restoration interventions, will be returned to public fruition. A great challenge awaits us in the belief that combining the concept of cultural heritage with the concept of development can and must be the winning combination for the regeneration of Sicily in the sign of a new government of culture”.

VALORIZING PALERMO'S HERITAGE

_THE BOTANIC GARDEN

_CHURCH OF SANTA MARIA DEGLI ANGELI



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THE BOTANIC GARDEN. RESTORATION OF THE SCULPTURAL ASSET

The Botanical Garden of Palermo is one of the most important Italian academic institutions and undoubtedly the one that best combines scientific reality and territory. Considered as a huge open - air museum, the Garden hosts various botanical species in need of constant and appropriate care.

The Botanical Garden is a part of the University of Palermo dating back to 1789. It represents the historical nucleus around which the Academic Botany developed starting since 1795. Initially the Chair of "Botany and Medical Matter" used the old bulwark of Porta Carini and a small surrounding area to establish a small vegetable garden suitable for the cultivation of the medicinal plants useful for teaching. The Garden today, after a series of extensions, covers an area of approximately 10 hectares. Decorated with plenty of statues and bas-reliefs, bordering the historic Villa Giulia, the Botanical Garden of Palermo has developed an activity of about two hundred years that has allowed the study and diffusion, not



only in Sicily but also in a European and Mediterranean level, of numerous plant species, most of which originate in tropical and subtropical regions.

The Gymnasium, the Tepidarium and the Calidarium, are the main buildings located inside the Garden. Designed in neoclassical style, they are the result of the cooperation of the French architect Léon Dufourny with many talented local architects. The decorative elements, including the frescoes of the vault, statues, tetrastyle, bas-reliefs and pillars of the entrance gate of Villa Giulia are attributed to many different painters and sculptors.

During the two hundred years of operation the garden has housed different plant species including medicinal and dried plants as well as collection of seeds and fruits. Today in the garden there are two main sectors, the oldest part located next to the Gymnasium and the modern part, next to the building of the Department to which the Garden is attached. Integral part of the Garden is the Aquarium. With a depth gradually decreasing towards its center, houses various species of water lilies, marsh plants and Indian lotus (*Nelumbum nucifera*). In addition to the living collections, the Garden today also has large collections of dried plants which are preserved in the Herbarium Mediterraneum, as well as a library with thousands of valuable and rare works, the oldest of which dates back to 1537.

Restoration work on the pool and the statue of Paride, at the Botanical Garden of Palermo

STATUE DESCRIPTION

The block consists of the basin and the statue of Paride was made in 1838. Made of Carrara marble, it has a height of 1.50 m, maximum width at the base of 1.10 m and length equal to 1.40 m. The base is of oval shape, in rough stone by Billiemi, and the statue rests on two blocks of calcarenite joined together.

RESTORATION PROCESS

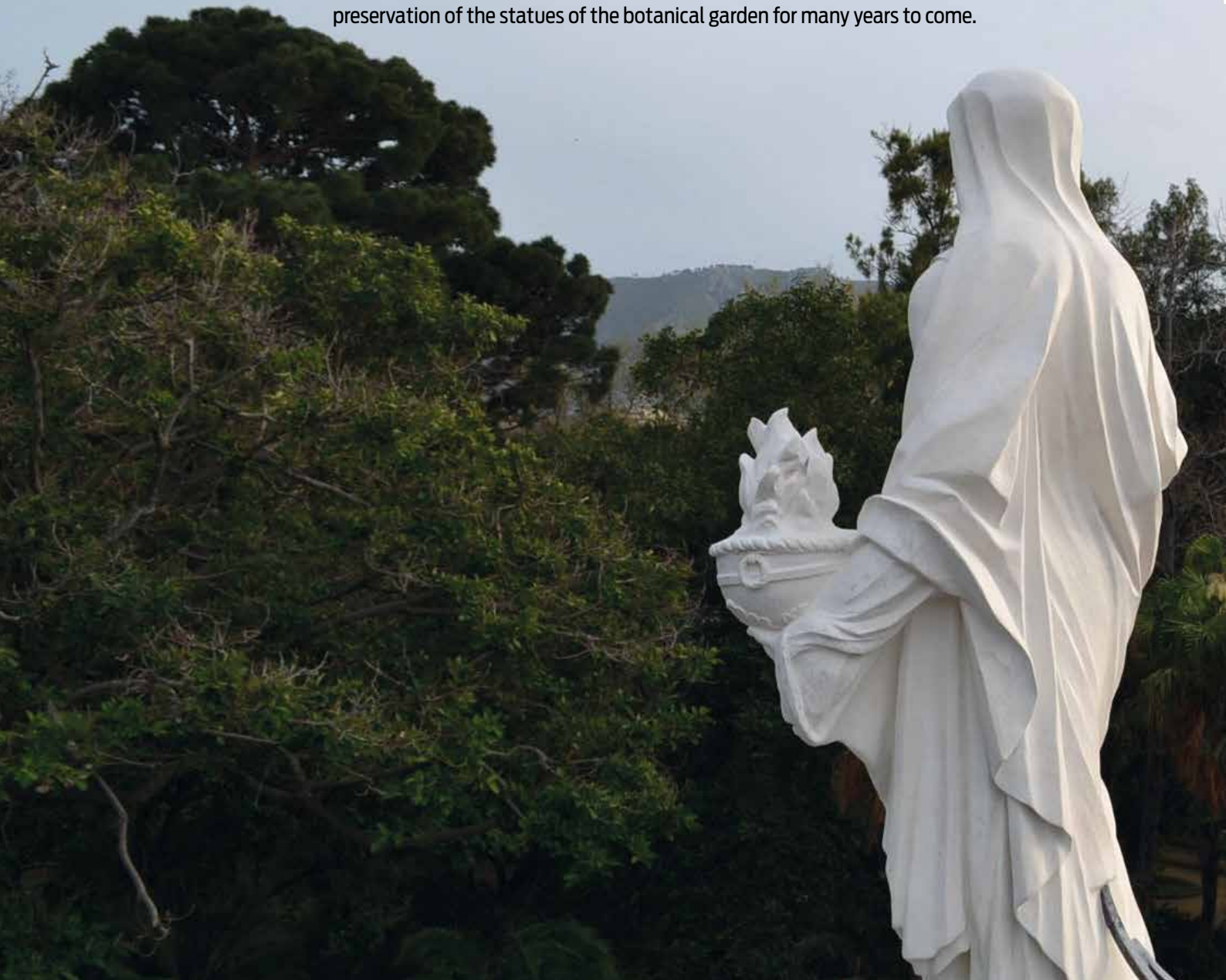
For planning a proper restoration several cleaning tests were carried out including: analysis of the surface with optical microscopy, analysis of humidity with a ponderal method, analysis of total soluble salts, quantitative analysis of sulphates, nitrates and chloride, analysis of the color using spectrophotometry in reflection. For a conscious approach to the intervention and a rapid execution of the tests, we chose an instrument able to operate directly in situ: IBIX MOBILE LAB. Thanks to an innovative software it has been possible to manage the tests and to create a technical report in compliance with the main UNI EN regulations regarding the conservation of Cultural Heritage. The IBIX portable laboratory makes it possible to carry out the analysis of the main stone materials directly in the construction site and to have the necessary documentation for the intervention project in real time. The analysis revealed the need to use micro abrasion, where possible, with the use of Almandite aggregate and ibix aircleaning machines.





The removal of plant organisms was achieved through packs of deionized water and Preventol (2%) in paper pulp, and after tests were carried out with the addition of 10% hydrogen peroxide. For the removal of the black crusts, the saturated ammonium carbonate with buffer was used. A consolidation was carried out on the statue using 5% of calcium nanoparticles in dispersion of isopropyl alcohol, applied by brush in the particularly abraded areas of the statue. Various application cycles were required until obtaining excellent result. The final phase included the application of a Fluorinated Protective, the Ibix protect IT R, with a water-dispersed brush.

The innovative impregnating agent, completely VOC free, durably protects the materials without altering the breathability, the color and the chemical composition of the supports. Protect it reticles in 24 hours providing a complete protection over seven days. Protect iT is able to protect surfaces for over fifteen years. Supports treated with polymer fluoride will be protected from moisture, rain and harmful external agents. The treated surfaces will be easily cleanable from pollutants such as spray paints, chewing gums and biological infestations. Thanks to this innovative technology it was possible to ensure an optimal state of preservation of the statues of the botanical garden for many years to come.



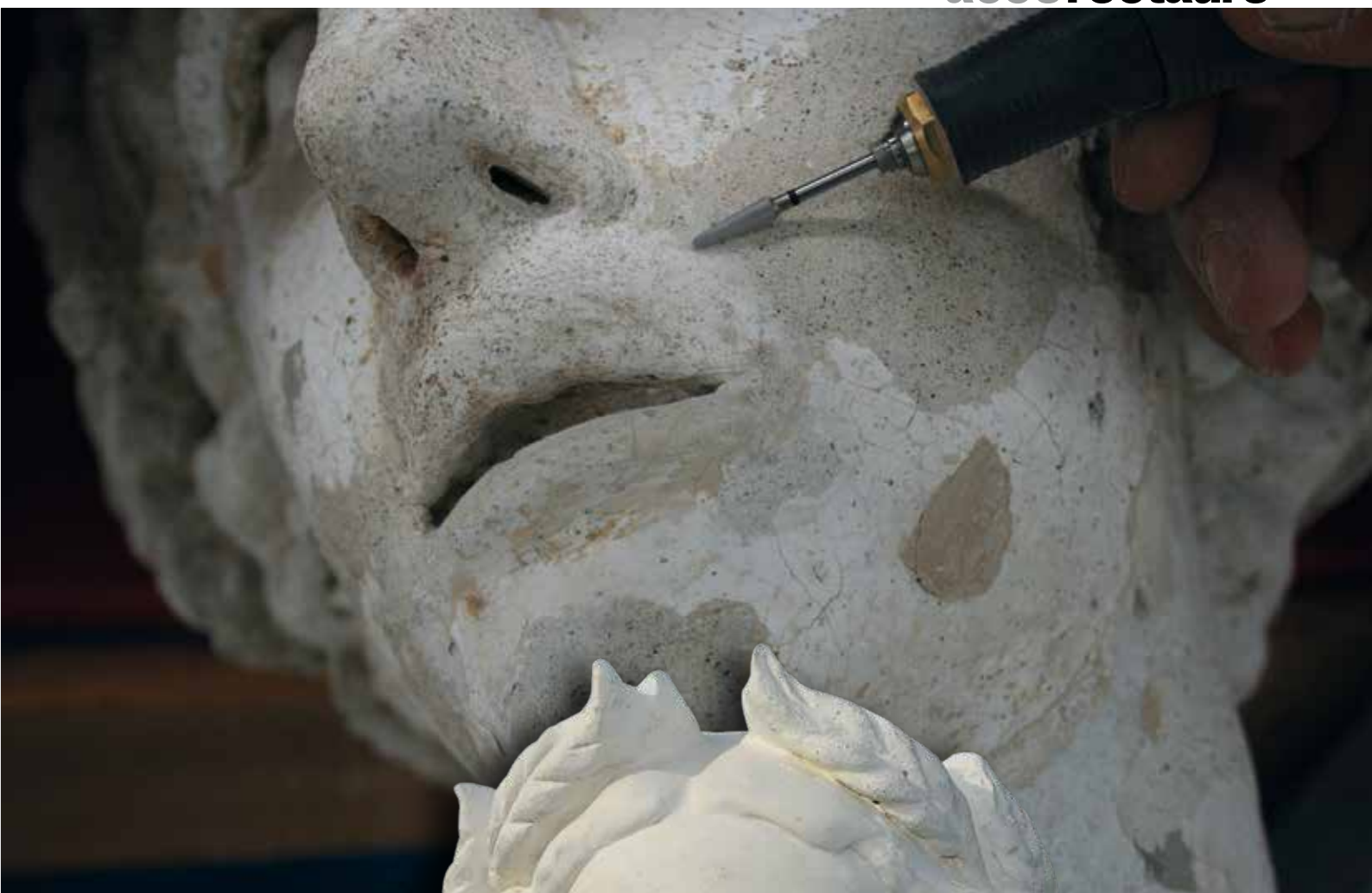


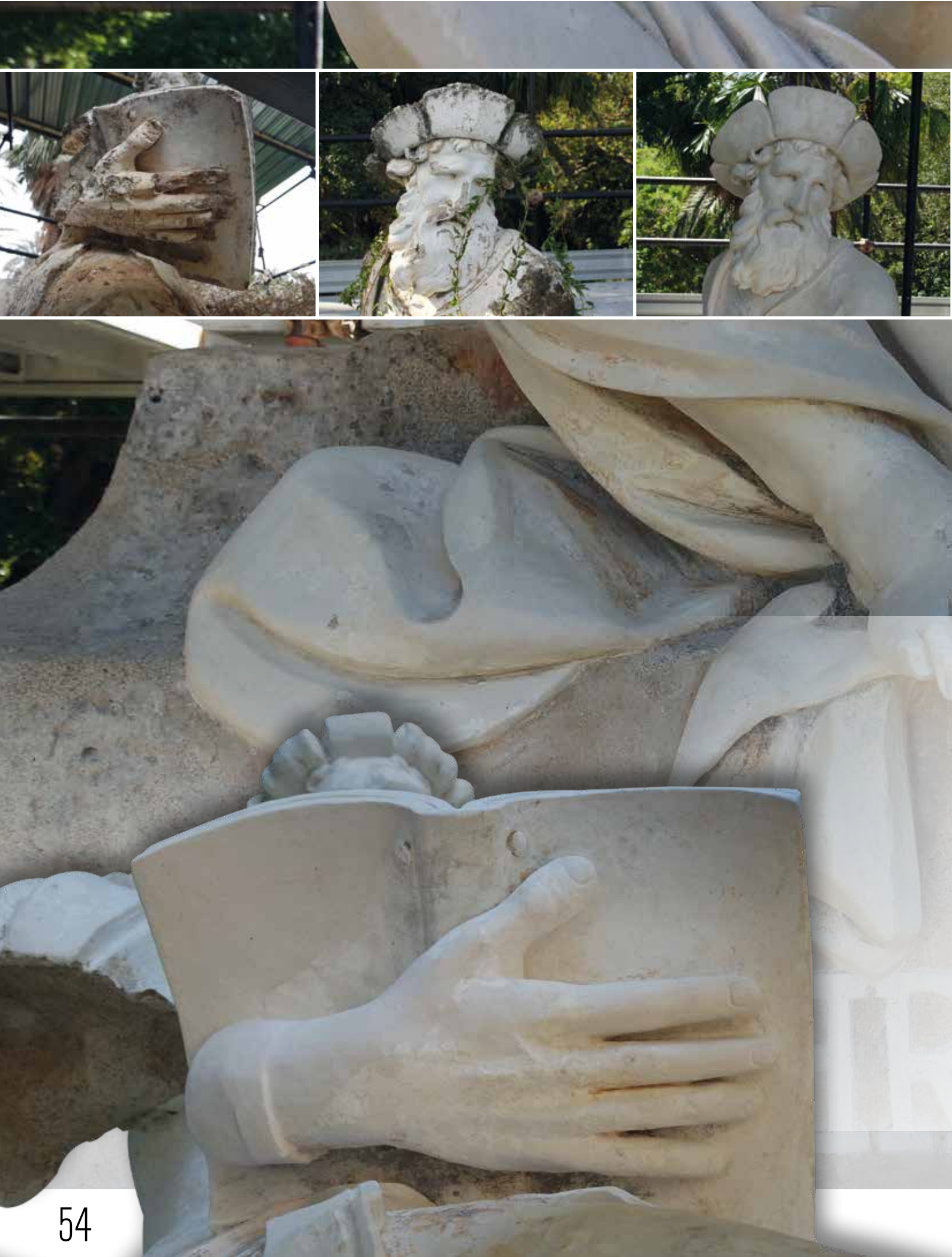


Conservative restoration of the crowning cornice and of the statues of the four seasons of the Gymnasium of the Botanical Garden of Palermo

RESTORATION PROCESS

At a first stage, disinfection was carried out through the application of Preventol biocide and manual removal with precision mechanical instruments, such as scalpels and brushes, etc. Subsequently, as required, a careful study was carried out for defining the best methodology to be followed regarding the consolidation of then internal metal bars. Afterwards the cleaning of the metal parts and the study of the positioning of the structural irons was done and then the passivation Consilex no rust was injected. Samples and laboratory analyses in the constituent mortars of the statues were carried out by the CNR ISTEK of Faenza. All the open parts of the statues were filled with pieces of earthenware shards and further sealed with Albaria mortar. To ensure the greater stability and compactness of the statues, it was decided to intervene by means of bars in corrugated cobalt fibers and in areas with particular detachment states with Syntech profix resin. All the patchy areas have been executed with hydraulic binder - based finishes with special granulometry of calcium carbonate and pulled in marmorino to match the original finishes.







Conservative restoration of the historic entrance of the Botanical Garden of Palermo - Historical pylons and statues of Dioscorides and Theophrastus

STATUE DESCRIPTION

The works include the restoration of the stucco statues, on limestone pylons, whose author was Domenico Dané and were made at the end of the 18th century.

RESTORATION PROCESS

During the preliminary study carried out on the monument, a careful analysis was performed through a detailed high resolution photographic documentation of the entire monument, with the observation of the surfaces through the portable Optical Microscope, Dinolite MDA2000 (40X and about 200X). Finally, a catalogue of the weeds present was made and preliminary scientific investigations were carried out for the characterization of the constituent materials and the identification of the degradation phenomena and alterations present.

In specific, the interventions on stucco surfaces included two basic stages: the in depth cleaning of the surfaces and the structural consolidation of cracks accompanied by the cleaning and the further protection of the metal elements if needed.

www.impresascancarello.it

CHURCH OF SANTA MARIA DEGLI ANGELI “LA GANCIA”: THE RESTORATION OF VERGINE DI GUADALUPE CHAPEL

The history within history. It seems like the preface of a novel set in a distant era, but in reality, this one (if not the main one) is of the many peculiar characteristics of the restoration in question.

The Chapel is located to the right of the main altar of the Church of the Gancia and, although this church is located in the heart of Palermo, it's owned by the Spanish nation, managed by the Opera Pia Stabilimenti Spagnoli in Italy. It is not the only example of Spanish properties in Palermo, but it is certainly the most emblematic and richest example of the strong cultural-political link has always been connecting Spain and Sicily.

This peculiarity was one of the main problems to start the restoration work. In fact, the chapel was mistakenly registered as the property of the Curia (Vatican). It was therefore necessary to retrace the long bureaucratic and administrative procedure to prove that from 1508 the real proprietor of the Chapel was the Spanish nation, so as to correct the error to be able to intervene with the restoration work.

Another peculiarity is the presence, inside the Chapel, of all kinds of artistic and decorative architectural artifacts, being decorated with stuccoes, frescoes, mixed and intramuscular

Preventive diagnostic
investigations on the
canvases





Stucco comparison
before and after

marbles, decorated wood, canvas and even with fences wrought in iron laminated with gold-foil.

The restoration works began 14 ago, by intervening on the coverings and eliminating the causes of infiltrations that had afflicted the precious decorations inside.

At that time, the sculptural group placed above the altar, which depicts God the Father and the Angels, was secured by steel ties on the masonry to prevent it from losing their stability, given that it was already shored up. From that moment began a scientific research with diagnostic investigations, acquisition of 3D reliefs started to lead the elaboration of the restoration project of the Chapel.



Structural mortar injections for plaster consolidation and removal of washi paper and dust

This project was divided into several lots, the current one concerning the consolidation and restoration of the architectural elements of the dome, together with the restoration of the tabernacle, of the wooden statue of the Madonna with the child and the two large paintings by the painter Vincenzo Buongiovanni, depicting the scenes of the Virgen de Guadalupe. The other phases concerned, instead, the restoration of the precious side walls and the floor.

The old and unsuitable scaffolding that had the function of shoring up the statues and the vault had been removed. On that occasion, the precious tabernacle in marble and the statue of the Virgin were moved to the museum of the Ajutamicristo palace and its custody was entrusted to the Palermo Superintendence. The preparatory work for the restoration continued with the dismantling of the two large canvases and separating their frames from the stuccos and their transport to the restoration laboratory, located in the large con-

vent adjacent to the Church with the collaboration of Ordine dei Frati Minori, who are in the guardianship of the Church.

Restoration intervention and investigation were made on the canvases: treatment with biocides of the biological attack that had damaged their supporting canvas; the veiling, the smoothing of the pictorial film, but above all an absolutely innovative technique was applied for the cold lining of the canvases. In fact, after having restored and integrated the original frame, an elastic tensioning system has been provided, through a series of springs and tempered steel wires, making sure that the two can be free to move. In this way, a greater life was guaranteed for the two canvases, performing a complex but lasting job over time.

The restoration company is taking care of the restoration of the works of art returning from the museum of the Ajutamicristo Palace. Among them the wooden statue of the Virgin was prey to biological attacks. Therefore, it was first necessary to put the statue in quarantine and then restoration began and continue with the operations necessary to homogenize the colors of the face and coat, which were the subject of a previous intervention carried out on an uncertain date.

As for the tabernacle, it is a reproduction in mixed marble of the chapel, with the addition of the painting on canvas of the Risen Christ applied to the wooden door. In addition to the cleaning operations, we will proceed with the restoration of the painting and the re-functionalization of the the door.

The Chapel was consolidated through injections with precise and punctual structural mortars on the cracks and through the insertion of carbon fiber and VRT bars. Than It had been carried out a complex work of unraveling of washi (japanese paper) present in the decorations, stuccos and architectural elements, and cleaned the dust and the salts that were widely present. Subsequently, the missing architectural elements (festoons, leaves, fruit, etc.) were recreated according to the instructions of the Palermo Superintendence and Construction Management. We then moved on to work on the stucco statues, recreating the marble effect.

Today it is possible to enjoy the restoration works in this splendid chapel.



Laura Compagnino

www.monrealeduomo.it

DUOMO OF MONREALE: A MASTERPIECE OF MOSAIC ART

Over a million visitors have admired this monument, considered by many to be the most beautiful temple in the world. The Monreale Cathedral is the symbol of a perfectly successful union of religion and art, with its finest mosaics and more than 1800 kg of pure gold sequins that were used to tell the story of Christianity. Legend has it that its founder, the Norman king William II of Altavilla, had built it in competition with Gualtiero Offamilio, then the archbishop of Palermo, who was simultaneously building the Cathedral of Palermo. The king and the archbishop did not like each other, both with obvious delusions of grandeur and overwhelmed by the desire to overcome the other, they did not mind the expenses and allowed themselves to go into phantasmagoric projects. On the thread of myth, it is said that in 1174, when Guglielmo was just twenty years old, the same Virgin Mary appeared to him in a dream revealing the hiding place where his father, William I - called "the Malo", had hidden a treasure. With such wealth, at that point, he would have had to build a temple dedicated to the Madonna. After these words, the Virgin disappeared and William, confident of the revelation in a dream, ordered that the carob tree be uprooted and the area around it be dug. With great astonishment, a treasure in gold coins, immediately destined to the construction of the Cathedral of Monreale, was discovered, and Greek-Byzantine mosaic masters were invited for the realization of the cathedral. The result is surprising, visiting the Cathedral of Monreale is an unforgettable experience that leaves one amazed. Already from the outside, we remain enchanted by the beautiful portals at the entrance, where important restoration works were carried out between 2015 and 2016 by Giuseppe Milazzo, now an official restorer of the Ministry of Cultural Heritage and Activities (MIBAC) at the Piemonte Museum Complex. The works allowed to improve the conservative conditions, since both portals were in very bad condition because of the salinization process. The conservative intervention has allowed the recovery of traces of the original color shade,

Fig 1. Monreale Cathedral.
Mosaic of Christ Pantocratore in the apse.
Photo Massimiliano Serrago®

Fig 2. Monreale Cathedral.
Detail of the mosaic of Christ Pantocratore in the apse.
Photo Massimiliano Serrago®





highlighting further the beauty and peculiarity of this unique example of Norman architectural sculpture with the chromaticism of the era. The interior of the Cathedral is one of the most exciting mosaic art shows possible for the variety of decorative, geometric and figurative elements, with the scenes from the Old and New Testament and Norman splendor. The original orientation of the church provided that, according to the canons of Eastern theology, the entrance was to the west, while the apsis with the Presbytery and the altar was to the east. With this symbolism it was wanted to be conveyed that one entered, into the Cathedral, from the world of darkness and sin by going towards the Light, where Jesus Pantocrator welcomes us as “a sun rising from above”. Today the entrance for visitors is on the lateral side, but the feeling of incredulity remains intact. On the walls of the Cathedral, an almost-intact preserved mosaic cycle winds which narrates the story of salvation, from the creation of the world to the resurrection of Christ, in a path that has - at its extremity - the two imposing figures of the Christ pantocrator of the apsis, whose arms are opened in a moving embrace that welcomes and lefts the faithful speechless, and of the Virgin in the counter-façade. Located at the bottom of the right aisle, there are the two beautiful royal sarcophaguses containing the remains of the two Norman kings, father and son, William I and William II. Both mausoleums were badly damaged by the fire in 1811 and renovated according to the original design. Between 2016 and 2017, Giuseppe Milazzo performed further restoration works on the sarcophaguses in light of newly-emerged techniques and unprecedented artistic peculiarities. Other restoration interventions have been carried out for the repositioning of the baptismal font, whose basin is made of Greek marble reused from Roman vestiges, and on the medieval chapter and in the columns of the adjacent cloister. A separate chapter deserves the Chapel of the Crucifix, built between 1673 and 1703. Among the colored marbles mixed, there is the fifteenth-century wooden crucifix that a tradition considered a gift of King William II of Altavilla, that ordered the construction in 12th century of the Duomo. Roano entrusted the job of designing the chapel to the Capuchin friar Giovanni di Monreale, subsequently replaced by the Jesuit Angelo Italia who completed it in 1686. Between 2016 and 2017, works carried out by restorer Giuseppe Ingui for the restoration of the mixed marbles, the statuary and the bell tower were started. Since 2015, the Cathedral of Monreale is part of the UNESCO World Heritage List, having been recognized as a “heritage of all humanity”.



21 JUNE
PIAZZA
ARMERINA

Laura Compagnino

[www.regione.sicilia.it/
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THE ROMAN VILLA OF GERACE. A TREASURE TO BE DISCOVERED

A treasure was hidden for centuries in the center of Sicily, a few kilometres from Piazza Armerina and Morgantina. And it would have remained unknown if exceptional meteorological conditions had not slid down the terrain so as to allow a glimpse of the traces of a glorious past. Today, the villa of Philippius, in the Gerace district, the province of Enna, is one of the sites that could reserve incredible surprises. The first excavations conducted in the 90s by Enza Cilia, an archaeologist of the local Superintendence, allowed the identification of a villa from the 4th century B.C., around which expanded a real farm, about 3 hectares wide. After the first excavation campaigns in 1994 and 2007, a convention between the Superintendence and the University of Vancouver (Canada) from 2013 led to systematic excavation campaigns that further confirmed the value of the site which was listed under protection since 2006. During the surveys, wonderful mosaics, a thermal plant and other structures of the sumptuous existence of the Roman senatorial class were rediscovered. A unique element that has already made this place famous is the discovery made, near the furnace, which included parts of the horse skeleton and more than two hundred and fifty seals stamped on roof tiles, and also the molds on which the name of Philippius is displayed. Their discovery marks an important step in the historical reconstruction of this villa, because they are a photograph of life in Sicily at the time of the Romans. Philippius was the lord of the villa, a wealthy landowner who, from the name of Greek origin, professed to be a “horse lover”. He was a successful entrepreneur who had enormous capital enough to set up a large farm and a horse breeding and training center.

As established by the late regional councilor for Cultural Heritage, Sebastiano Tusa and the president, Nello Musumeci, the excavation campaign of the Enna Superintendence is currently underway, curated in house of the regional administration. According to Tusa, the Gerace district villa is one of the most prestigious late-ancient Mediterranean residences. The works are carried out by the company "Ignazio Fabrizio Cassisi" which works on behalf of the Enna Superintendence and directed by the architect Salvatore Gueli, will carry out the necessary restoration and roofing works in view of the public use of the site, which is located inside a farm that is a part of the medieval village of Gerace. The Superintendent of Cultural Heritage of Enna, Salvatore Gueli, in the wake of what has been indicated since his inauguration by the councilor Sebastiano Tusa, wanted to underline the fruitful collaboration between public and private. "We have succeeded", he said, "to work in full harmony because the owners understand how the uniqueness of this place can also be a positive element in productive and social terms".





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CONSERVATION AND MAINTENANCE OF THE TRICLINIUM OF LA VILLA ROMANA DEL CASALE

La Villa Romana del Casale in Piazza Armerina, a UNESCO site, is a large manor house located in the Sicilian hinterland and represents an extraordinary example of a noble residence. As regards to the identification of the client and the owner, no definitive resolution of the problem has been reached; surely, he is a leading personality of the late imperial age belonging to the rich Roman Senatorial Aristocracy. Some scholars have identified Massimiano of the Great Hunt that witnesses the transport of the beasts in the figure of the mosaic, while others have assimilated the personality of Maxentius in the man who whips a slave.

About the chronology of the construction of the building there are various interpretations: H. Kahler (1973), defines four building phases, of which the main one around 300-320 A.C.; A. Carandini (essays from 1970) identifies a phase preceding the late-Roman installation, dating back to the end of the 1st century A.C. to the tetrarchic age. With the research by the Archaeological Superintendence of Agrigento (1983 De Miro, Fiorentini), it was possible to identify a "rustic" phase (end of the I-II century A.C. until the abandonment took place in the last quarter of the III century A.C.) and an The Triclinium





The triclinium (triclinium) is a large dining room where the dominus housed the guests of respect, consisting of three large apses and a central space that, according to some, was intended for the entertainment of diners with dancers and musicians. In the apses there were probably tricliniums, beds, often in bronze, without backrests but with cushions, on which the guests, lying on one side, ate the hearty meals served by the servants. “intermediate” phase during which the “monumentalization” of the architectural building took place.

THE TRICLINIUM

The triclinium, a large dining room where the dominus hosted the respected guests, consists of three large apses and a central space that, according to some, was intended to entertain dining companions with dancers and musicians. In the apses there were probably tricliniums, beds, often in bronze, without backrests but with cushions, on which the guests, lying on one side, ate the hearty meals served by the servants.

On the floor of this room, there are mythological-themed mosaics representing the cults of Bacchus and Hercules. In the central part, the twelve labors of Hercules are illustrated: they kill the invulnerable Nemean lion and carry his skin as a trophy; kill the immortal Hydra of Lerna; capture the wild boar of Erimanto; capture the Cerinea deer; kill the birds of Lake Stymphalus; clean the Augean stables in one day; capture the bull of Crete; steal Diomedes's horses; seize the belt of Hippolyta, queen of the Amazons; steal the oxen from Gerione; steal the golden apples from the garden of the Hesperides; take Cerberus, the three-headed dog guardian of the Underworld, to Mycenae. In each corner, Bistoni knights are represented, killed by the arrows of Hercules. In the apses, there are other mosaics. In the northern apse, the glorification of Hercules by Jupiter is depicted: we see the hero naked, with powerful musculature and with a leopard skin on his shoulders, tied on his chest, receiving the laurel crown on his head. The mosaics in which depicting the metamorphosis of the nymph Daphne in a laurel plant and that of Ciripasso in cypress is depicted are also beautiful.

Roberta Bianchini
Laura Franci

RESTORATION OF “CASALE DI PIAZZA ARMERINA” ROMAN VILLA



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Casale Roman Villa is a late roman residential building, commonly called “villa”, although it does not have the proper features of the countryside roman villa, but rather those ones of the urban imperial palace. The remains are placed about four kilometers from Piazza Armerina, a small village in the heart of Sicily. From 1997 it is a UNESCO World Heritage Site. The Villa belonged to a representative of the roman senatorial aristocracy, probably a governor from Rome (Praefectus Urbi). Instead, according to some specialists, it was built and expanded on direct imperial patronage. Considering its beauty and the complexity of its plan, it is considered one of the most significant examples of representative dwelling,



Biological attack



Reinforced iron bars removal

compared to other contemporary ones of the Roman Western Empire. The high profile of his owner is celebrated, in a very eloquent manner, through an iconographic program, conditioned in its style by the north-african roman culture, that is displayed with a compositional richness in many rooms, both public and private ones.

The first museological arrangement was planned at the end of '50s by the architect Franco Minissi that, with the knowledge of that time, worked for protecting the Villa and its mosaics from the bad weather. He designed a cover, definitely modern and innovative at the time, using iron posts and trusses and plexiglass sheets covering the roof and closing the perimeter wall of the Villa. It was the age developing new materials, and plexiglass, flexible and versatile, was suitable on the purpose. Then arch. Minissi designed a cover recalling the third dimension, the volumes of the Villa. Even this was an innovative choice, along all the scenario of the contemporary coverings in the italian archaeological sites. Moreover He assembled the external wall using wooden sheets, closing the external perimeter, and invented the ingenious solution of the footbridges, installed on the internal crown walls. It was a very useful system for visiting the Villa, that allows walking the tour around the rooms and enjoying the view of mosaic from above.

Unfortunately the system did not work long, because the sun deteriorated plexiglass, and the water continued to enter from the inner portico, that was left open. So arch. Minissi, claimed several times to solve the problems complained, replaced the side walls plexiglass sheets with glass ones and with the previous ones he closed the large space of the portico. These changes, if from one side tried to solve the problem of rainwater, in another one transformed the Villa in a huge greenhouse, with in addition the presence of the velario, a plastic curtain, installed in the rooms to quench the shadows threw by the transparent cover on the floorings. Practically the false ceiling, closing the space under the roof, has created the conditions for a heat accumulator.

The survey on all the decays of the Villa, through several components, has allowed us to provide a comprehensive response to the alleged issues. The project springs, indeed, from all the information provided by the various technical specialists, chemists, physicists, biologists, technologists, that in an interdisciplinary way have contributed to solve the different decays.



Execution of the grids



Support's consolidation



Consolidation

THE RESTORATION INTERVENTION

The intervention aimed to recover the original idea of arch. Minissi, giving back life to the spirit of the project, replacing the materials, used originally for the covering, with others more suitable for conservation.

In detail the work was focused on the visiting walkways, the covers, the perception of light and shadow relationships within the Villa, the research of compatible materials for the construction of the roof and the restoration of the mosaic decorations and painted plaster.

THE MOSAIC SURFACES

The conservative restoration of floor and wall decorations ensured a general conservation aimed to stop or considerably reduce the decay processes. The necessary operations, for performing the restoration, were supported by all laboratories' tests, useful for a correct intervention.

Concerning the mosaic carpets, the painted plasters and the statues, specific methods for the execution were settled, considering the peculiarities of each case and the different issues for 120 million tesserae, assembled in about 4000 square meters of mosaics and marbles. The cleaning and restoration of the mosaics were carried out by technicians and specialists coming from the local market, from rest of Italy and abroad. For years the restorers worked continuously in alternate shifts, developing innovative methods and techniques. It was a real health clinic for tesserae and floorings, populated by white overalls technicians and experts. First were removed old silt layers, mold, algae, bacteria, fungi and salts; cleaned the tesserae, damaged by aggressive products of earlier restorations (wax-

es, encrustations, resins); detached small mosaic portions to intervene on the reinforced iron bars of cement screeds, now rusty; leveled the gaps and infiltrated into the substrate consolidating products, as barium hydroxide that has been injected with needles inserted between the tesserae, using hundreds of drip bottles. It allowed the removal of some salts and the cohesion of the support.

The next step was the reconfiguration of the gaps, using the technique of carved tesserae for the geometric decorations, and the neutral base for the figures. It allowed recovering the legibility of most of the original mosaics.

In the Villa, for the first time, a precious reconstructive technique of the gaps was implemented, carried out in some details of small dimensions figures, using chromatic dispersion carved mortar, according to the primary colors on the edges, borrowing this technique from the pictorial reintegration of paintings and frescoes.



Cleaning phase





Reconstructive technique of geometric gaps

21 JUNE
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MANIACE CASTLE: THE RESTORATION OF A MILITARY ARCHITECTURE IN SYRACUSE

The Maniace Castle is located in the furthest part of the island of Ortigia, the historic heart of ancient Syracuse, a Doric colony of great importance in the pre-Roman world. It was built between 1232 and 1239 by order of Frederick II of Swabia who entrusted the work to Riccardo Lentini. The name of the castle comes from the Byzantine commander Giorgio Maniace, who had built structures- right on the site where the castle stands- to defend the port of Ortigia, exploiting its strategic position which was known since the times of the Greeks. With the Angevins the Castle became a royal heritage, assuming a decisive military role during the wars between the Angevins and the Aragonese for the control of the Kingdom, also with the function of a prison. From the sixteenth century it underwent a series of transformations and evolutions including the more general fortification plan that involved the whole city, until the seventeenth century whose historical cartography corresponds in line with the current one, with the exception of the Punta del Forte Vignazza built in the nineteenth century. A tremendous explosion that occurred in 1704 in the armory located in the north-east tower, destroyed a big part of the building. The subsequent reconstruction left the surviving parts intact, reinforced with buttresses, and infill walls were created to delimit spaces and build warehouses. This incident led to a profound change in the static nature of the fortress and caused an important structural modification of the building. During the Bourbon period, the castle regained its military functions and was equipped with a defense construction and guns. The castle continued to have a military function until the 1980s. The new post-explosion planimetric conformation remained largely unchanged from 1740 until today. During the last decades of the twentieth century, the demilitarization and the closure of the army barracks brought the castle to the public use. (Photo1) In 2009, the building was the seat of the G8 Environment Meeting (informal forum of environment ministers organized by the G8 presidency). For this occasion, doors and window openings were sealed with glass doors and windows. This last operation in particular caused a strong alteration of the internal microclimate of the Ipostila hall and of the adjacent rooms, generating marine aerosols that favored the development of biological crust. The intervention of conservative restoration on the surfaces involved the hypostyle hall of the Maniace Castle in Syracuse, the room called "Polveriera", the room called "del Caravaggio" and the façades of the inner courtyard (uncovered areas) as well as the monumental Portal.



THE CASTLE

For the construction of the castle, the characteristic Syracuse stone was used mostly, with the exception of the five vaults of Sala Ipostila, which were made of lava stone.

The local sandstone sedimentary rock comes in three different forms, called “giuggiulena”, “lumachelle” and “quaternaria”: these titles reflect the external appearance of the stone, characterized by different textures depending on the place of extraction in the quarry. Before proceeding with any type of intervention it appeared necessary to characterize the biological crust, the main cause of the general state of degradation in the internal environments. The surveys on the samples consisted in analysis on glossy section and in biological cultivation analysis. Following the outcome of the investigations, the possible biocide products suitable for the context were identified; therefore, the operating procedures were defined, analysing their effectiveness, possible support methods and contact times. Once the biocide treatment process was taken on, the surfaces could be analyzed to determine how to intervene with the subsequent cleaning phase: areas characterized by the presence of residual superficial deposits of plaster and rubble, incrustation and bleaching were in fact revealed. The intervention was performed with localized compresses, supported by paper and sepiolite pulp and ammonium carbonate solution. Due to the tenacity of some concretions, a further intervention of localized mechanical cleaning was necessary, consisting of a precision micro-sandblasting with an aggregate which was lower in hardness compared to the stone in use: therefore, very fine pumice or garnet sand was used, and only in







some cases, in the presence of deposits very adherent to the support, aluminum oxide was used. Other investigations have been carried out in order to determine the composition of the mortar bed to identify the various types of grouting mortar present. This allowed us to relate them to the various interventions conducted inside the Hypostyle hall during its long and complex history. We continued with the removal or lowering of pre-existing grouts that had already deteriorated and lacked conservative or aesthetic functionality and then moved on to grouting and sealing all the cracks. The joints between the various constituent elements and the gaps were filled using a mixture of hydraulic lime based with low salt content and powder of aggregate suitable for coloring and granulometry identified according to the D.L (Decree.Law). In the areas affected by superficial pulverization and decohesion phenomena, cohesion was reestablished with the application of ethyl silicate. The intervention ended with a general protective final treatment on all stone surfaces with the aim of reducing the effects of meteoric water on the outside and of marine aerosols inside, and at the same time slowing down the repopulation by biological crust.

THE PORTAL

The entrance to the castle opens on the north-west side through a majestic portal with an ogival arch, splayed, made with polychrome marbles. Although marked by the degradations and the vicissitudes of the structure, the portal still preserves the slender columns and the capitals covered with hooked leaves and surmounted by four animal figures, finely carved in stone (photo 7). In three of them two lions and a hippogriff are still recognizable, which in addition to animating the portal like the floral decoration of the archivolt, symbolically represent the strength of the Kingdom and served as a warning. On the sides of the portal, visible are two rectangular niches that housed, until the end of middle XVth century, two bronze rams from the Lisippea school, of which only one survivor is now visible at the Salinas Museum in Palermo. The ogive of portal is surmounted by a large imperial coat of arms of Spain and a marble plaque, placed on the façade in 1614, in memory of the Spanish domination.



The advanced deterioration of the lithotypes makes a specialized conservative intervention necessary today, which cannot be separated from a careful investigation of the building. To this end, the Superintendence carried out scientific studies aimed at investigating the state of conservation and the evolution of the phenomena of alteration over time. The identification of the colored stone materials of the castle portal was obtained on the basis of their macroscopic characteristics, assessed by means of autopsic analysis, performed also thanks to comparisons with photographic atlases of ancient marbles. For the marble itself, both white and colored, small samples were taken and then subjected to laboratory tests. The surveys included: the petrographic study under the microscope, the execution of a powder diffractometry and the isotopic analysis.

Most of the stone surfaces showed phenomena of advanced deterioration, especially the surfaces most exposed to atmospheric agents. All the architectural elements showed faults and cracks, while some constituent materials were characterized by phenomena of differential alteration, favored by the anisotropic texture of the lithotypes. Capitals and sculptural reliefs appeared degraded until they were pulverized. Black crusts and deposits were present on all the protected surfaces of the arch's intrados. Instead, the presence of biological patinas, such as lichens, algae and moss, was weak.

The intervention on the Portal was different from that of the rest of the castle in the cleaning and consolidation phases. After removing superficial deposits, the Thunder art laser system, in collaboration with El.En Group, was used to lighten the dendritic crusts.

This system is particularly suitable for the removal of black crusts from stone materials thanks also to the possibility of operating with wavelength in both the near infrared (1064 nm) and in the visible (532 nm). The laser is a so-called Q-switched system with very short pulse duration of a few ns. The laser action proved to be effective and selective in removing only the crust without affecting the original marble surface and without further damaging the already-altered areas.





For the consolidation of marble surfaces, after careful analysis we chose to use ammonium phosphate (DAP)

“In accordance with expectations, the analytical studies conducted using SEM-EDS, MicroRaman, etc., and the verification of the consolidating effect obtainable with DAP, performed with different methods (Drilling Resistance System, Abrasimeter, etc.) on treated samples, have demonstrated that the formation of calcium phosphates and the consequent re-aggregation effect involve thicknesses of the order of a few millimetres in depth (3-4 on average). The recovery curve of cohesion, from the surface through the interior, gradually decreases, as is expected for a consolidating treatment, provided, however, that the concentration of DAP does not exceed values of 5-7%; when the context and operating conditions are such as to favor the formation of hydroxyapatite, the most desirable result is obtained. The hydroxyapatite, as evidenced by its presence in bones, is a very stable substance and well compatible with calcium carbonate. The protocol for applying ammonium phosphate is done by applying the aqueous solution to the pack; preferably with a contact time of 24 hours). The treatment with DAP is completely odorless and non-toxic so besides being harmless for restorers and visitors, it results to be sustainable.”

Mauro Matteini, Contribution to the December 2015 Conference



quaderni di assorestauro



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