Lisandra Franco de Mendonça

Mussolini's swimming pool in the former *Palazzo delle Terme* (current *Edificio delle "Piscine Coni"*) at the *Foro Italico*, in Rome: historical analysis and conservation

Abstract

The former *Palazzo delle Terme* has its two wings connected by a volume in reinforced concrete that acts like a "bridge", which contains a hanging pool: the former *Piscina del Duce*, current *Piscina Pensile*. The pool is subjected to extreme artificial environmental conditions: the relative humidity in the room is linked to the temperature of the water in the pool, the heating of the air and the lack of appropriate ventilation mechanisms. These conditions lead to condensation on the walls of the perimeter and to the formation of mold. The condensation contains traces of chlorine, hence it is particularly corrosive and may undermine the resistance of the structure, as well as the many technological elements necessary for heating and air and water treatment. This research was developed in several archives in Rome in which the author was able to consult the architectural project, technical descriptions of the building and photographic surveys. The architectural survey was done simultaneously and was followed by the survey of construction pathologies. The research allowed a discussion pertinent to the restoration of a designated modern building that is still functioning and subject to a great load of technical equipment and energy expenses.

Keywords

Foro Italico. *Piscina Pensile*. Conservation project. Conservation of Modern Architecture. Construction pathologies of Twentieth-century architecture.

doi: http://dx.doi.org/10.11606/issn.2317-2762.v25i47p92-111

Pós, Rev. Programa Pós-Grad. Arquit. Urban. FAUUSP. São Paulo, v. 25, n. 47, p. 92-111, set-dez 2018

A ANTIGA PISCINA DO DUCE NO ANTIGO EDIFÍCIO DAS TERMAS (ATUAL EDIFÍCIO DAS *“PISCINAS CONI”*) NO *FORO ITALICO*, EM ROMA: ANÁLISE HISTÓRICA E RESTAURO

Resumo

O antigo *Palazzo delle Terme* é composto por duas alas distintas unidas por um volume suspenso onde se encontra uma piscina coberta, a chamada *Piscina Pensile*. A piscina está sujeita a condições ambientais artificiais extremas: os valores da humidade relativa no compartimento estão diretamente relacionados com a temperatura da água, o aquecimento do ar e a falta de mecanismos apropriados de ventilação. Essas características dão origem a fenómenos de condensação nas superfícies expostas e à formação de bolor. A condensação contém vestígios de cloro e por isso é particularmente corrosiva e capaz de minar a resistência da estrutura, bem como as instalações técnicas necessárias ao tratamento do ar e da água. Esta pesquisa desenrolou-se em diversos arquivos em Roma, onde foi possível consultar o projeto de arquitetura, descrições técnicas da obra e levantamentos fotográficos. Simultaneamente foi feito o levantamento arquitetônico e, sucessivamente, de patologias na construção. A pesquisa permitiu a discussão de temas pertinentes ao restauro de um edifício moderno classificado em funcionamento e com uma grande carga de instalações técnicas e gastos energéticos.

Palavras-chave

Foro Italico. *Piscina Pensile.* Projeto de restauro. Restauro da Arquitetura Moderna. Patologias da construção da arquitetura do século XX.

Brief historical background: the construction of the *Foro Mussolini*/ *Foro Italico* complex

In 1927, with the suppression of the *Ente Nazionale per l'Educazione Fisica* (Physical Education National Governing Body) its functions were transferred to the newly created *Opera Nazionale Balilla* — ONB[1] (*National Balilla Institution*) chaired by Renato Ricci (1896-1956). On the initiative of Renato Ricci, the construction of a sports and teaching complex would be promoted in Rome – the *Foro Mussolini* –, current *Foro Italico*. The urbanistic project for the sports complex, which had successive conformations, was initially under the direction of the architect Enrico Del Debbio (1891-1973), the head of the ONB's technical office. In 1933, the architect Luigi Moretti (1907-1973) took over the direction of the project. The sports complex was built between 1927 and 1937.

In accordance with a proposal by Enrico Del Debbio, the chosen area for the construction of the Foro was located on the northern outskirts of the city of Rome, between the Tiber and the slopes of Monte Mario, the *Villa Madama* and the *Ponte Milvio* (Milvian, or Mulvian, Bridge). The reasons for choosing this area were the value of that particular landscape (with the wooded hills of Monte Mario), which was to be protected from real estate speculation, and the natural depression of the land, which –after the containment of the river's flooding, the draining of flooded areas and the raising of the area by ca. 5,5 meters – allowed for the low density, balanced and disperse architectural set of the sports facilities, with the wooded hills in the background, following the classical model[2].

As had been foretold in the speech given by Benito Mussolini (1883-1945) at the ceremony celebrating the laying of the first stone of the Forum, on February 5, 1928, the initial project was successively reformulated and expanded to include a series of buildings and sports facilities, part of a sophisticated urban scenography that counted with contributions from some of the highest exponents of Italian architecture of this period (GRECO; SANTUCCIO, 1991; ZACHEO, 1982) — a true monument to Fascist civilization, in continuity (as professed by the regime) with the grandiose tradition of Imperial Rome.

[1] The ONB, an Italian Fascist organization for the political education and the physical and moral training of the youth (under the age of 18), was active between 1926 and 1937. It was instituted by the Reggio *Decreto Legge* No. 2247 of April 3, 1926. Initially, this organization was under the tutelage of the head of the government, Prime Minister Benito Mussolini. The ONB changed its name in 1937 to *Gioventù Italiana del Littorio* —GIL, and new statutes (*Reggio Decreto Legge* No. 1839 of October 28, 1937) put it under the direct influence of the Italian National Fascist Party, whose motto was "*Credere – obbedire – combattere*" ("Believe – obey – fight"). From this time on, the organization represented the youth section of the party (whose members were 6 to 21 years old).

[2] The project draws from the theatres and stadiums of classical antiquity, which were framed by wooded valleys and took advantage of the topography of the site and the beauty of the surrounding landscape (cf. PIACENTINI, 1933 *apud* GRECCO; SANTUCCIO, 1991, p. 82).

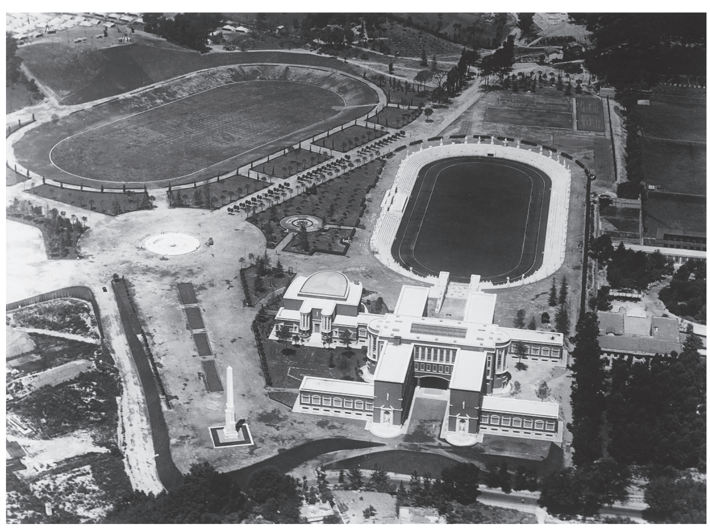


Figure 1: Alinari, Fratelli, aerial view of the *Foro Mussolini*, ca. 1930. On the center right, the image shows the building of the *Accademia Fascista di Educazione Fisica* and the *Stadio dei Marmi*. On the lower left, the *Obelisco Mussolini* (or *Stelle Mussolini*) and the *Piazzale dell'Impero*. On the upper left, the *Stadio dei Cipressi* (Cypress Stadium).
Source: Archivi Alinari, Florence, ACA-F-048156-0000.

Beginning with the building of *the Accademia Fascista di Educazione Fisica*[3] (*Fascist Academy of Physical Education*), current *Edificio H del CONI* (Building H of CONI), and the adjacent gymnastic training field —the *Stadio dei Marmi* (Stadium of the Marbles)—, both designed in 1927 (Figure 1), Enrico Del Debbio drew an urban plan for the site in late 1928, naming it *Scuola Superiore di Educazione Fisica e Foro dello Sport* (College of Physical Education and Sports Forum) (GRECO; SANTUCCIO, 1991, p. 8; ZACHEO, 1982, p. 88) — the genesis of the *Foro Mussolini*. This initial plan, organically conceived for the flat area at the foot of *Monte Mario*, already encompassed the circular plaza (named *Fontana della Sfera*), which would remain the central point of the pathways of the complex in all its successive versions, as well as the avenue (*Piazzale dell'Impero*, current *viale del Foro Italico*) that defined the symmetry axis for the duplication of the *Accademia Fascista di Educazione Fisica* building. In the 1929 version of the plan, this avenue, with the *Obelisco Mussolini* (Mussolini Obelisk) in its southern limit (in the *Piazzale del Monolite*, current *Piazza Lauro De Bosis*), became the main entrance of the Foro Mussolini complex. This version also introduced a new bridge over the Tiber, the *Ponte Duca d'Aosta*, to provide a connection to the Flaminio district and the city beyond the bridge, following the axis of the *Piazzale dell'Impero* (Figure 2). This sports infrastructure covered a vast area of both public and private property, partly owned by the *Ente Ferrovie dello Stato* (State Railway Service).

In November 1929, the ONB, a "moral institution" created for educational purposes[4], was placed under the direction of the Ministry of National Education (where Renato Ricci had assumed the post of undersecretary), and thus acquired a new economic and political relevance[5]. The new *Piano Regolatore di Roma* —PRR (Master Plan of Rome), approved on July 6, 1931, generically designated the Foro Mussolini as a public park with sports facilities. The PRR introduced two legal instruments that benefited the Foro: the "expropriation" and the "detailed urban plan" (Italian: *piano particolareggiato*), which allowed the occupation of the land needed for the implementation of the plan and the detailed design of the urban set. Two economic circumstances enabled the final drafting of the General Plan in 1932/33 (including two versions in 1933): following the Royal-Decree-Law No.

[3] This building now houses the *Comitato Olimpico Nazionale Italiano* — CONI (Italian Olympic Committee).

[4] Article 1 of the law that established the ONB states: 'È istituito un ente morale, con sede in Roma, denominato "Opera Nazionale Balilla per l'assistenza e per l'educazione fisica e morale della gioventù"' ('A moral institution based in Rome is constituted, under the denomination "Opera Nazionale Balilla for the assistance to and the physical and moral education of the youth"') (Legge n. 2247, 3rd of April 1926 apud GRECO; SANTUCCIO, 1991, p. 72).

[5] The ONB surpassed its initial role of cultural institution aimed at ideological indoctrination that complemented school education to become a paramilitary institution that also guaranteed vocational training (namely through evening courses for adults).

Figure 2: Enrico Del Debbio, Vittorio Ballio Morpurgo and Arnaldo Foschini, "*Ministero degli Esteri – Nuova Sede. Planimetria Generale – Foro Italico – Rapp.1:2000*", 1957. Source: MAXXI *Museo nazionale delle arti del XXI secolo*, Rome. MAXXI Architecture Collection, Archive Enrico Del Debbio.

1001, £30 million per year and a loan were assigned to ONB (GRECO; SANTUCCIO, 1991, p. 8; ZACHEO, 1982, p. 88).

On November 4, 1932, the first buildings were inaugurated: the *Accademia Fascista di Educazione Fisica* complemented by the *Stadio dei Marmi* and the *Stadio dei Cipressi*, the origin of the current *Stadio Olimpico* (Olympic Stadium), all designed by Enrico Del Debbio; and the Mussolini Obelisk, designed by the architect engineer Costantino Costantini (1904-1982) to mark the 10th year of the Fascist era and the homage of the *Opera Balilla* to the Duce (GRECO; SANTUCCIO, 1991; ZACHEO, 1982). Based on the second version of the 1933 plan — entitled *Progetto in variante del Piano regolatore Generale dell'impianto del Foro Mussolini* ("Project as a variant of the General Plan of the Foro Mussolini complex") —, a new set of buildings emerged. After almost ten years, the absolute protagonism of Enrico Del Debbio in the project of the Foro came to an end.

Among the various emblematic buildings of the complex we may find, among several others and in addition to those already mentioned, the *Casa delle Armi* or *Accademia della Scherma* (Luigi Moretti, 1933-1937), located at the southern end of the *Foro Mussolini*, near the south entrance, and the *Palazzo della Farnesina*, designed by the architects Enrico Del Debbio, Arnaldo Foschini (1884-1968) and Vittorio Ballio Morpurgo (1890-1966), built from 1937 to house the headquarters of the Ministry of Foreign Affairs[6] (GRECCO; SANTUCCIO, 1991, p. 64, p. 69).

The importance of this monumental project attracted numerous designers and artists. Costantino Costantini intervened in the projects of the *Foresteria Nord* (North Hostel) and the *Palazzo delle Terme* — designed to receive the indoor pools — , which accommodated also the *Accademia di Musica*; and Luigi Moretti undertook the design of one of the most emblematic indoor spaces of the *Palazzo delle Terme*, the *Palestra del Duce* (Duce's Gymnasium),

Figure 3: Luigi Moretti, Foro Mussolini, general urban plan, 1937.
Source: *Archivio Centrale dello Stato*, Rome, Fondo Moretti, folder 74, draft 6 (under the authorization of the *Ministero per i Beni e le attività culturali, Archivio centrale dello Stato*, 2018).

[6]The initial project, the result of a competition for the *Palazzo del Littorio* (seat of the National Fascist Party), was commissioned for another location in the city of Rome. Its location was subsequently changed to the vicinity of the *Stadio dei Marmi* in Mussolini Forum. The building was under construction at the beginning of World War II and remained unfinished for a few years. It was completed in the 1950s (GRECCO; SANTUCCIO, 1991, p. 64).

located on the first floor. As mentioned above, Moretti also undertook the design of the successive urban plans of the *Foro Mussolini* from 1933 onwards: a 1936 version that was not executed (*Progetto estensivo del Piano Generale del Foro con l'Arengo della Nazione*) and two other versions, from 1939 and 1941, which covered ten times the area of the initial plan (Figure 3). These urban plans were more and more imbued with rhetoric and farther away from any plausible possibility of concretization during wartime.

In the post-war period, the *Foro* had new additions and underwent a series of interventions, alien to the rest of the set, that were put in motion for the 1960 Olympic Games, held in Rome (GRECO; SANTUCCIO, 1991, p. 8; ZACHEO, 1982, p. 88). Namely, an aquatic center was inaugurated in 1959 — the *Stadio Olimpico del Nuoto* (Swimming Olympic Stadium) —, designed by the architects Enrico del Debbio and Aniballe Vitellozzi (1902-1990) and the engineers Sergio Musmeci (1926-1981) and Riccardo Morandi (1902-1989); the Swimming Olympic Stadium was reconfigured and expanded for the 1994 World Aquatics Championships (BUGLI, 1994) and enlarged in 2000 with a new swimming pool for water polo; and the *Campo Centrale* (Central Field) — a new tennis stadium for the Tennis Centre — was built to host the 2010 tournament.

The building of the two indoor pools: the palazzo delle terme

The former *Palazzo delle Terme*, complemented by the former *Accademia di Musica*, is located south of the former *Piazzale dell'Impero* (Figure 2), positioned symmetrically to the former *Accademia Fascista di Educazione Fisica* and identical in its volumetric composition, color —"Pompeian red", chosen for its connotation "*[...] with the Roman tradition of the Empire, as an ideology, and of the "gymnasium" as function [...]*" (GRECCO, SANTUCCIO, 1991, p. 49; trans. by the author) —, and planimetric layout. It is in this building, in the "bridge" hall that unites two wings, that the former *Piscina del Duce* is located, currently named *Piscina Pensile* and functioning as a swimming school for children. The south wing of the *Palazzo delle Terme* (Figure 4) was completed in May 1936, while the north wing, with the *Accademia di Musica*, which now houses the *Auditorium della RAI* (*Radiotelevisione Italiana*) and the *Università degli Studi di Roma "Foro Italico"* (University of Rome "*Foro Italico*")[7], was concluded ca. 1937 (GRECCO; SANTUCCIO, 1991, p. 56, p. 58, p. 69; ZACHEO, 1982).

The former *Palazzo delle Terme* accommodates a large indoor pool (the current Olympic Swimming Pool), located in the central area of the building (Figures 4 and 5), on the ground floor. It contains also a small pool, the *Piscina Pensile*, on the second floor. The *Piscina Pensile* has a surface area of 25 by 8 meters and a depth varying from 40 cm to 1.80 m. It was originally a swimming school for *Balilla* and *Avanguardisti*, two ONB substructures for young males. The large swimming pool measures 50 by 18 meters, its depth varies between 1.40 m and 5 m and it has a capacity of 3 million liters of water. Both pools are entirely covered with Carrara marble interspersed with stripes of Bardiglio Carrara marble. The floor surrounding the pools is covered in black and white mosaic marble stones, following drawings by Giulio Rosso (1897-1976) that feature aquatic motifs inspired by classical Roman themes (GRECO; MURATORE,

[7] Formerly, it housed the *Istituto Superiore di Educazione Fisica* — ISEF (Institute of Physical Education). This institute was created to provide training to physical education teachers and reorganize the courses of the fascist academies of physical education, which had been abolished with the fall of the Fascist regime (July 25, 1943). With the end of the *Repubblica Sociale Italiana* (1943-1945), the Italian government created the *Istituto Superiore di Fisica Educazione*, housed, until 1998, in the building originally occupied by the *Accademia di Musica*, at the *Foro Italico*. It gave place to the *Università degli Studi di Roma "Foro Italico"*, dedicated to sports and movement sciences.

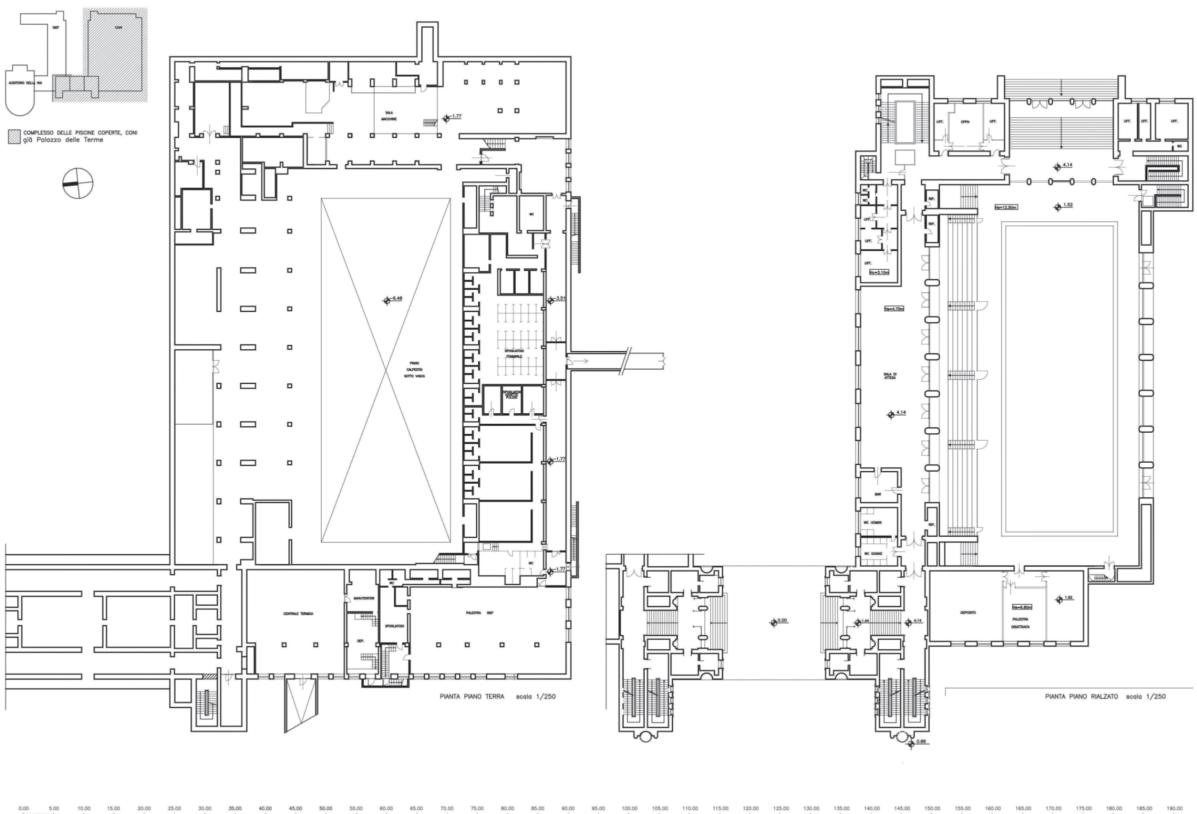
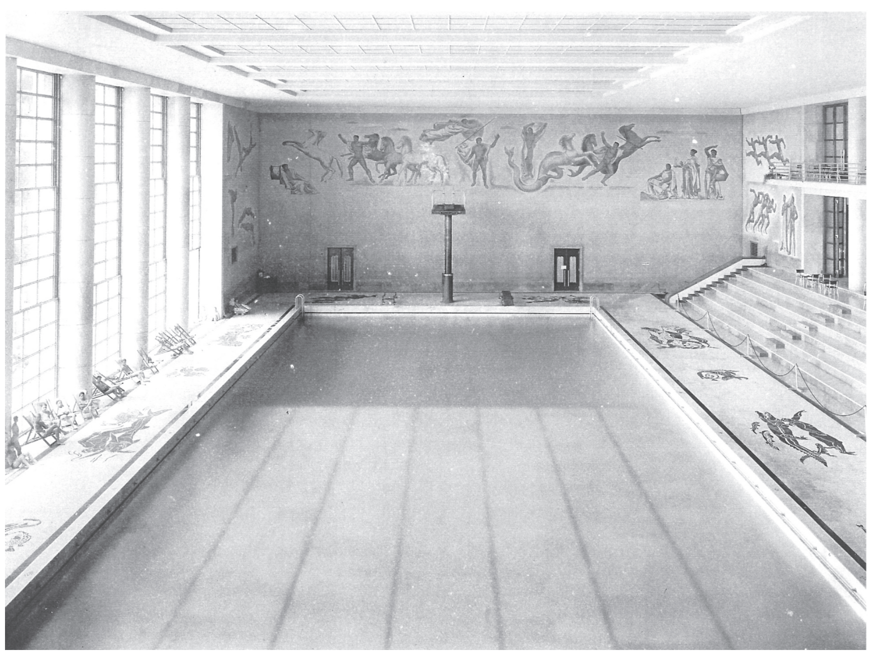


Figure 4: Plans of the south wing of the former *Palazzo delle Terme*, which comprises the two indoor pools. Plan of the underground floor with the technical facilities (left) and plan of the ground floor, showing the Olympic Pool (central area) and the access to the *Piscina Pensile*. Redesign of the plans based on the blueprints found at the CONI Archive. Source: Author.

Figure 5: [Unknown author], the large swimming pool in the *Palazzo delle Terme*, 1940s. Source: © ICCD - *Istituto Centrale per il Catalogo e la Documentazione, Gabinetto Fotografico Nazionale*, n. inv. D006131 (under the authorization of the *Istituto Centrale per il Catalogo e la Documentazione* – MiBACT, no part of this image may be reproduced by any means without the permission of ICCD).



1990). The walls of the large pool hall are covered with mosaics designed by Angelo Canevari (1901-1955).

The former *Palazzo delle Terme*, currently under the concession of CONI, has undergone several interventions throughout the years: a) the rehabilitation of the roof and external plasters (made from pozzolana) for the 1960 Olympic Games (ZACHEO, 1982); b) the replacement of the original wooden frames of the windows with aluminum frames in 1977 (PEDULLÀ, 1994); c) the removal of the original frames of the large windows on the south facade of the building where the Olympic Pool is located; and d) the replacement of the traditional plaster mortars with cement-based quartz in the external and internal surfaces of the walls (GRECO; MURATORE, 1990). During the 1990 Football World Cup, the external plastering was redone once again. The building also underwent several major alterations in order to host the 1994 FINA World Aquatics Championships, such as: a) the replacement of the furniture; b) the renovation and redesign of the sanitary facilities; c) the modernization and adaptation of the electrical installation; and d) the renovation of the water purification and filtering system of the swimming pools (BUGLI, 1994; PEDULLÀ, 1994). The white Carrara marble slabs that covered the cornices of the building had several cracks, mainly due to the oxidation of the iron stone fixing clamps used to hold the slabs together. These marble slabs were drilled and bolted to the parapet wall in the 1990s, and the resulting holes, which were then covered with plaster, are now in full display, significantly disrupting the austere design of the facades.

Construction pathologies of the Piscina Pensile block

The *Piscina Pensile* lies within a rectangular room, which receives daylight from fourteen large windows along its two longer sides and from an iron wrought skylight, attached to a mechanized system that enabled the opening of the skylight leaving the area opened to the exterior (Figures 6, 7 and 8). This system, made entirely in iron, stopped working more than 20 years ago and was never recovered or replaced. In the 1990s, the external structure of the skylight was partially covered with a PVC membrane, which prevents rainwater seepage, but not the advancement of the

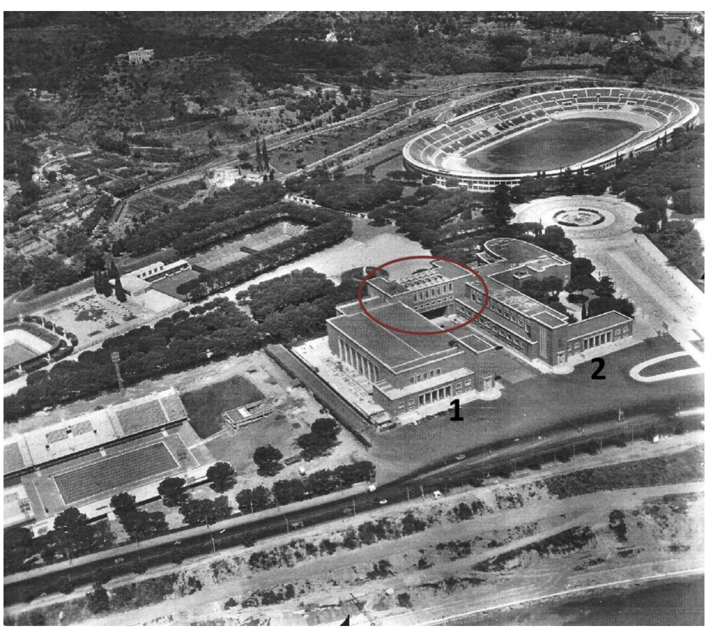


Figure 6: [Unknown author], partial view of the *Foro Italico*, 1950s. The *Piscina Pensile* is located in the *Palazzo delle Terme*, on the second floor (signaled by the ellipse). Source: © ICCD - *Istituto Centrale per il Catalogo e la Documentazione, Aerofototeca Nazionale*, AFN, *fondo Aeronautica Militare, foglio* 150, neg. 225339 (under the authorization of the *Istituto Centrale per il Catalogo e la Documentazione* – MiBACT, no part of this image may be reproduced by any means without the permission of ICCD).

corrosion of the wrought iron elements, some of which are now completely irrecoverable.

The building's flat roof is supported by sixteen columns in reinforced concrete, covered with Carrara marble, with a layout that references some elements of the Villa Adriana in Tivoli, or the design of the *impluvium* of a Roman house (Figure 8). The service areas, which include the bathhouses, are located on the

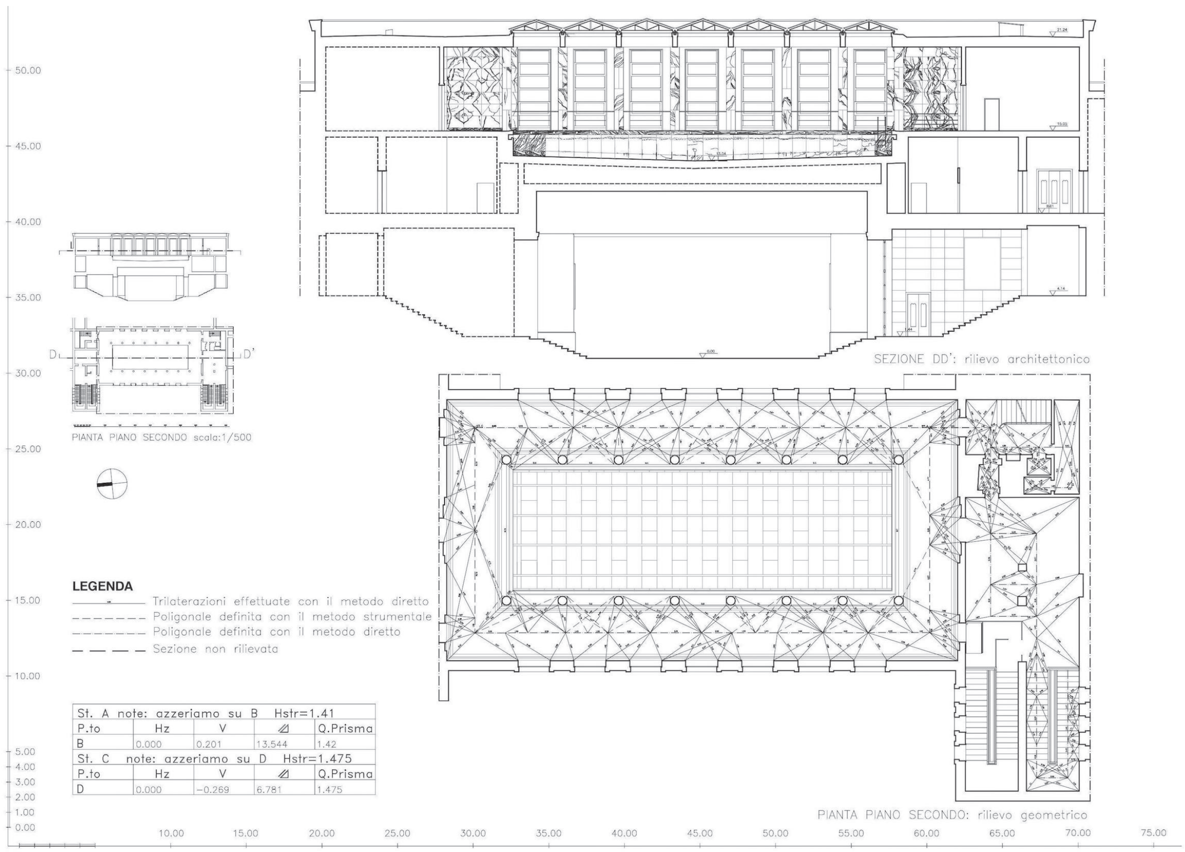


Figure 7: *Piscina Pensile,* metric survey, plan and cross section.
Source: Author.

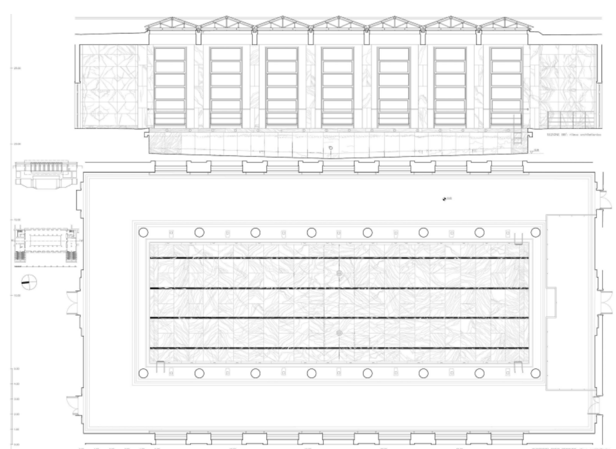


Figure 8: *Piscina Pensile,* architectural survey, plan and cross section.
Source: Author.

lower floor of the pool, making it difficult to separate wet and dry paths through the single access staircase connecting the two floors. Under this floor, at street level, lies the entrance to the stairwell that connects the two suspended floors of the pool (Figure 7). The entire flooring of the circulation areas outside the pool compartment and the locker rooms, which were covered with marble slabs, were covered with linoleum decades ago. The walls were plastered with traditional mortars (a combination of lime plaster and pozzolana) and originally painted with light grey lime paint (currently with yellow paint). Some sections of the walls in the pool chamber (the bottom of the longer sides of the plan and nearly the whole of the shorter sides) are covered with marble.

The most degraded facades of the *Piscina Pensile* building are those facing East and West, subjected to extreme temperature ranges and a series of cycles of salt crystallization and solvency that produce an accentuated decay of the plasters. Several water spots have appeared along the facades of the building, located mainly along the bottom of the large windows and beneath the base of the ledge of the roof. The presence of soluble salts in the plaster and in the cement in the walls is caused by a number of factors, in particular the process of water seepage in certain "weak" points, which are the result of what we may call the "construction deficiencies" of the building (FRANCO DE MENDONÇA, 2003, p. 14).

Based on the analysis of the results of the restoration work carried out in 1990, on the analysis of technical reports and other documents found at the CONI Archive, and on a detailed survey of the building (throughout the year, in different environmental conditions), it was possible to identify the "constructive deficiencies" of this object. Such "deficiencies", according to our research, stem from the fusion of traditional building techniques with the innovation brought by modern construction materials and techniques, the most "modern" of which may have been experimental and not fully understood at the time (e.g., flat roofs, downpipes embedded in the walls, large glazed windows without adequate thermal insulation, etc.).

The large windows in the pool chamber, originally equipped with narrow wooden frames, stylish yet technologically insufficiently resistant and with low thermal insulation, were completely degraded and no longer functional after a few years. Their original design did not allow the correct flow of the rainwater, which seeped into the interior of the building, given that they sat on marble windowsills that were practically flat and at the same level as the floor inside the compartment. This facilitated the infiltration and accumulation of water around the base of the windows in the pool chamber. With the replacement of the wooden window frames in the late 1970s with aluminum frames, low walls were added on top of the marble windowsills (Figure 9). However, the condensation that forms on the glass surfaces inside the compartment continued to flood the floor, allowing humidity to penetrate the perimeter walls between the windows, where it rises up and forms efflorescence (a powdery white, crystalline-looking substance) and causes the plaster to decay, both inside (in larger amounts) and outside, on the facades.

Among the "construction deficiencies" of the building, we may highlight: the lack of adequate waterproofing at the intersection between the drainage channels around the flat roof and the parapet wall (Figure 9) — the asphalt has not been folded and brought up to a certain height over the ledge, and there is no flashing (a sheet cover between the drainage channels and the parapet wall to render it waterproof); the insufficient pending of the flat roof, which was aggravated by poor maintenance and previous ill-advised restoration schemes (such as the overlapping of different asphalt membranes); the fact that some roof drains that became clogged over time (due to the lack of proper cleaning of the gutters and of strainers) were covered with asphalt, leading to the

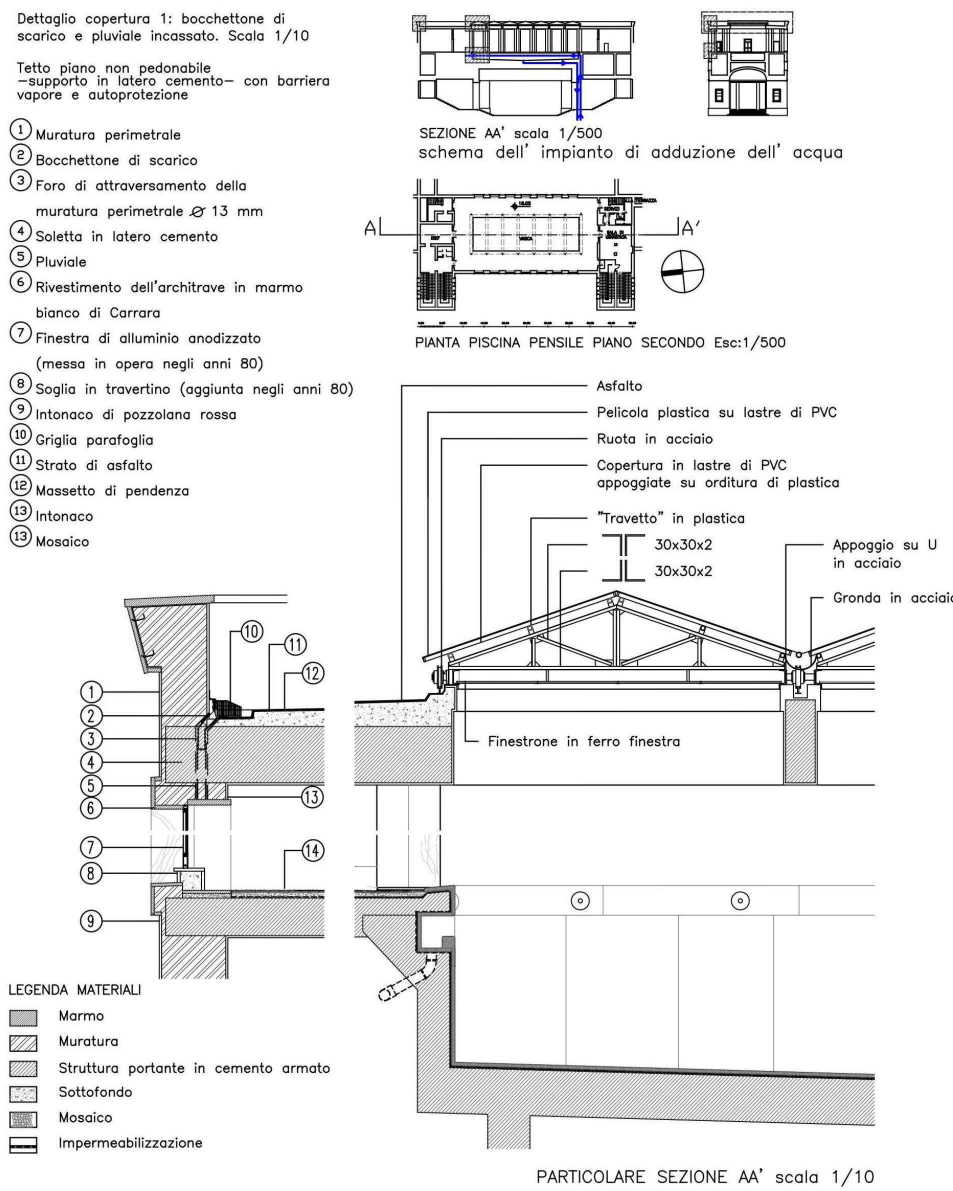


Figure 9: *Piscina Pensile*, facade section, scale 1/10. Source: Author.

accumulation of water in various points and to the emergence of large water stains on the perimeter walls, particularly in the surrounding areas of two damaged downpipes; the fact that the external window sills were not advanced relative to the plan of the façade, which would facilitate the flow of rainwater; the lack of maintenance of the asphalt and bitumen used on the flat roof, designed to be impervious to moisture, leading to water seepage; the lack of adequate ventilation in the pool chamber, causing the formation of a permanent sheet of condensation on the surrounding surfaces; and the poor quality of construction and design detail of the interventions carried out in the building over the years, mostly to adapt it to current legislation (e.g., all the beautifully designed perforated marble slabs that formerly covered the ventilation channels on the walls were replaced by aluminum grilles).

The microclimate of an indoor pool and the adequacy of a designated building to present-day legislation

The microclimate of a heated indoor pool (air temperature and humidity, ventilation), like its acoustics and technical lighting conditions, has a significant impact in the welfare of users and expresses the efficiency of this type of installation. It is the quality of the pool water that chiefly determines the health of this environment and conditions its microclimate, constituting the most important parameter for calculating and determining comfort values in the pool, outside the pool and in the surrounding environment. The production of large quantities of water vapor from the heated water surface of the pool generates a considerable increase of the relative humidity in the environment (directly related to water temperature). High relative humidity causes the formation of mold and water condensation on the walls and structural elements of the room. As the condensate contains traces of chlorine, it is particularly corrosive and may undermine the strength of the structural elements. For these reasons, the structural system and technical facilities of an indoor swimming pool are subject to rapid wear phenomena and require constant maintenance.

The increase of the water temperature in an indoor pool (which occurred over the past decades) requires the increase of the temperature in the surrounding environment — the lower the relative humidity is, the higher the environmental temperature must be. The use of low values of relative humidity in indoor pools causes an increase of water evaporation, which requires an increase in the renewal of treated air, in order to maintain a suitable hygrometric level (DE SANTOLI, 2000). The use of higher values of relative humidity — in the past it rarely exceeded 50%, whereas now, in Italy, it varies between 60% and 70%, with an air temperature of around 28 ºC, the water temperature exceeding 24 ºC (preferably at 27 ºC) and the air velocity below 0.15 m/s, according to the CONI standards — became possible mainly due to improvements in the insulation of the building's outer shell and to the use of more efficient air distribution systems in the perimeter, which allow the saving of energy by reducing, among others, the evaporation of the pool water (which itself is responsible for up to 50% of the total expenditure of energy in this type of infrastructure) (DE SANTOLI, 2000). The air temperature, however, should always be relatively high, because it must be approximate to the water temperature in the pool. The various spaces necessary for an infrastructure of this type to function properly, with temperature variations and different relative humidity values (e.g., the pool environment, the antechambers, the shower and locker rooms facilities, etc.) must be separated by thermally insulated, highly airtight walls that may thereby prevent the dissipation of steam.

The criteria for the suitable location of the air treatment unit (heating/ventilation) and for the air distribution and circulation system should be decided early on, at the preliminary design stage. It must be ensured that air circulates evenly into the compartment, protecting the surfaces of the perimeter walls, as they are more susceptible to the phenomenon of condensation. In addition, it must be guaranteed that users (both swimmers and spectators) will enjoy comfortable conditions and that there will be greater energy savings (by clearly identifying the parameters that should be taken into account to manage this type of facility with high energy consumption). The choice and location of air treatment systems in an existing building should consider the following criteria: a) the compatibility between this mechanism (air treatment system) and the constructive technology of the building, avoiding chase (added cables and pipes) and overloading the flooring as much as possible; b) easy management and maintenance of the system (which implies a precise selection of the distribution network design); and c) compatibility between the selected system, the function of the building and its conservation.

The existing regulations in Italy, which also apply to designated buildings, contain reference values to be taken into account in the various facilities, which implies a specific study of the location of air conditioning and heating networks, the ventilation of the bathrooms, the fire protection system, etc. In an infrastructure of this type, it is necessary to take into account that the water circulation system should be periodically reviewed and that the pool must be emptied and its bottom and walls cleaned and disinfected at least once a year, along with the water adduction and filtration systems (mainly due to the risk of biological and chemical contamination). The building materials must be moisture-resistant, environmentally friendly, innocuous to human health and properly certified.

The increase of water temperature in indoor swimming pools is directly related to the change of the microclimate requirements in these environments, which brought about important adjustments in the projects of new swimming pools, equipped with more sophisticated technical installations that entail high energy expenditures. In a pre-existing building, the overload of this type of technical infrastructure, the stress it undergoes (the impact of the new microclimate on the structure), and the changes in its conformation whenever there is a need to adapt it to new requirements in order to keep it functioning (which is important for its own conservation over time) are constraints to take into account in the planning phase of the alterations. In the case of a designated building, as is the case of the former *Palazzo delle Terme*, the suitability of the various project domains to the technological and aesthetic characteristics of the building and the need to keep the original matter, including technological information, intact as much as possible (following the criterion of minimal intervention and legibility of the various phases of intervention in the structure) are of decisive importance to the conservation project[8].

[8] The guiding principles of restoration are the following: (i) minimal intervention; (ii) the (at least potential) reversibility of the intervention; (iii) the readability of the intervention; (iv) chemical-physical compatibility; and, borrowing from Giovanni Carbonara (1997), (v) the present-day – if we conceptualize restoration as an act of our time and the manifestation of today's historical, figurative and expressive culture.
Architectural restoration constitutes a particular meaning of the commonly understood restoration, which differs from it, not in terms of theoretical principles but, in practical operability, by the consistency, dimension and "spatiality" of the objects it serves (BRANDI, 2000, p. 77; CARBONARA, 1997, p. 11), inseparably linked to a "historic site" and to its own environment. For the analysis of the transformations of the concept of restoration over the centuries, of monument, of heritage and the contextualization of the current debate in Europe, and for complementary bibliographical references, see CARBONARA, 1997; CASIELLO, 2008; DEZZI BARDESCHI, 2006; JOKILEHTO, 1999.

If this is a modern monument... brief considerations on the conservation of "recent" architecture: interpretation and method

The *Foro Italico* is a monumental urban complex that can now be appreciated with the adequate distance to understand the historical and ideological context that shaped it and to understand its figurative and symbolic values (GRECO; MURATORE, 1990, p. 5). The exceptional character of this sports complex should suffice to acknowledge the validity and the purpose of its conservation: for the rigor of its urbanistic design, balanced with regard to the natural context of *Monte Mario*, for the interest of a singular infrastructure destined to large collective celebrations — some of them the most important within the ideological program that was dominant in Italy between the great wars — for the value of each of its architectonic elements, considered in isolation (GRECO; MURATORE, 1990, p. 5) and for the integration of works of art with immense communicative and persuasive value, which testifies, as a whole, to the richness of human thought and production of the twentieth century.

Nevertheless, and considering that these are all designated buildings, the complex has undergone several transformations that have significantly compromised many of its elements (e.g., the huge steel structure built above the Olympic Stadium, which distorts its proportions and the original design of the landscape project of the complex; the dramatic change in composition and color of the plastering in the former *Palazzo delle Term*e; the former *Accademia della Scherma* has been severely altered and used for many years as high security court; all the area has been enclosed by disfiguring railings, etc.), while many spaces are simply disregarded, subjected to a general degradation process due to lack of maintenance, as is the case with the mosaic flooring in white Carrara and black Verona of the former *Piazzale dell'Impero*.

Today's discussion on the conservation of the *Foro Italico* also involves the effective recognition of the cultural value of modern monuments and sites, and a legal framework that protects the urban set as a whole, including urban design, buildings and environmental and landscape integration. In addition, it involves the capacity to carry out maintenance work and systematic restoration of the various elements (e.g., redefinition of window frames in the former *Accademia Fascista di Educazione Fisica* and in the former *Palazzo delle Terme*, restoration of lime-based plastering, redefinition of urban furniture and fencing, and restoration of the overall decorative apparatus composed of mosaics, frescoes, statues, etc.), critically placing them in their proper temporal and historical space (BONELLI, 1963) and fully understanding their documental value, as well as their urban and aesthetic qualities.

Academic research carried out in recent years, in this field, allows us to verify that "recent" heritage faces specific conservation problems that have found erroneous justification in the diversity of the constructive materials and technologies it employs (KÜHL; SALVO, 2006; SALVO, 2007). Indeed, the restoration of modern architecture entails technical/constructive/material specificities that demand new skills from restoration operators, but do not justify "*[…] deformations of conceptual and methodological nature […]*" (CARBONARA, 2006, p. 24; trans. by the author) in the discipline. In fact, it makes no sense to undertake a technical operation of restoration without scientific, ethical and cultural objectives (TORSELLO, 2010, p. 9), as well as a more comprehensive reflection that attempts to rethink the problem at its core: the "why" of architectural heritage preservation. Operational choices should be made in the light of objective reasons for restoration. Each building (due to its material characteristics and temporal course) requires a critical-historical interrogation and a reflection on the theoretical precepts of the discipline, "*[…] so that each action does not become arbitrary, even if it must always be problematized […]*" (KÜHL, 2009, p. 1; trans. by the author).

More so in the case of modern architecture, it is evident the difficulty in accepting the patina and the vestiges left by the passage of time, as they are not easily associated with the figuration and materiality of the "new"/intact/contemporary. It is as if for the contemporary *Kunstwollen* (will of art), modern architecture — appreciated as a testimony of human creation without being properly understood as the product of a temporality that, although close, is distinct from the present (CARBONARA, 1997)—, should embody, above all, the "value of novelty", by presenting itself continuously without the signs of time, in the conceptual, formal and pictorial conditions of origin (FRANCO DE MENDONÇA, 2016a, p. 198). However, it is clear that the repristination of the "value of novelty" imposes the loss of other values — those of antiquity, historical, technological and aesthetic, among others— i.e., the concrete loss of data from the "text" that are fundamental for its appreciation, interrogation and interpretation by future generations (CARBONARA, 2007, p. 11).

The first difficulty of restoration work is the choice of the system or school of thought that will guide the evaluation of the "historicity" and the "artisticity"[9] of the building and the subsequent operations (FRANCO DE MENDONÇA, 2016b, p. 11). According to Giovanni Carbonara (1997, p. 8), in the field of restoration, strictly speaking, during the last decades of the twentieth century two opposing tendencies were observed in the Italian context: the first assigns to the discipline the task of defending the figurative and artistic data of the building, whenever present; the other recognizes other valences, of documentary, social and anthropological nature. The author refers to "creative" or "critical restoration"[10] — as it essentially understands restoration as a historical-critical process based on History, Art Criticism and reflection on Aesthetics (CARBONARA, 1997, p. 291-292)— together with Brandi's prepositions expounded in his ***Teoria del Restauro*** (Theory of Restoration); and the "integral conservation" or "pure conservation" — based on the stability of historical-documentary value, as opposed to the subjectivity and inconstancy of aesthetic appreciation (CARBONARA, 1997, p. 294, p. 296, p. 298; SCARROCHIA, 2003, p. 91-98). Both behaviors correspond to two parallel systems, historically legitimate and concomitant to our contemporaneity. However, as Giovanni Carbonara (1997, p. 8) claimed twenty years ago, it seems legitimate to decline the prepositions of "critical restoration", while availing ourselves of some suggestions implicit in the thinking of Cesare Brandi (1906-1988), Roberto Pane (1897-1987) and Renato Bonelli (1911-2004), i.e., remaining open to the protection of "history" and "art" objects and the demands of maximum conservation, in agreement with an understanding of restoration that can be defined as "critical-conservative". The expression "critical-conservative restoration", coined by Giovanni Carbonara, corresponds to a theoretical-operative orientation that descends from the evaluation of Cesare Brandi's critical reflection and the integration of inedited contributions from authors like Roberto Pane, Paul Philippot (1925-2016) and Renato Bonelli —e.g.,

[9] Neologism by Cesare Brandi (cf. BRANDI, 2000).

[10] For definitions and an analysis of "critical restoration", see Carbonara (1997, p. 285-301). Critical restoration is based on the understanding that each intervention towards restoration is a case *per se*, which can neither be placed in a predetermined generic category (such as those that have been carefully defined by so-called "scientific restoration" theorists: decomposition, innovation, etc.), nor satisfy to predefined rules, but rather must be exercised with originality, on a case-by-case basis (CARBONARA, 1997, p. 285), an originality that should not be confused with conceptual and creative "arbitrariness" (KÜHL, 2009, p. 1).

the concept of restoration as a "critical hypothesis"[11]; the annulment of the distinction between conservation and restoration, as they are placed on the same methodological line, in which conservation is reduced to nothing more than a continuous form of preventive restoration (CARBONARA, 1997, p. 335); '*[…] "patina" as a "critical" concept and not merely a "physical" one […]*'[12] (CARBONARA, 1997, p. 332; trans. by the author); and the practice of interrogating the building (which itself suggests the most adequate course of action) (ALTHÖFER, 1991, p. 147), with a critical-historical sensitivity, in accordance with a deeply reflexive behavior oriented towards maximum conservation, which continues into the stage of operative practice.

Conservation project

The historical investigation and the project of conservation of the *Piscina Pensile*, developed within the scope of the author's specialization thesis in architectural conservation, was based on the assumption that only the "correction" of "constructive defects" with technological innovations that respect the pre-existing structure, can guarantee its function[13], resistance and formal qualities and be conducive to improvements in its maintenance. The proposal was divided into two distinct phases: the first corresponded to a general project that indicated all the planned interventions, the priorities of the intervention and the sequence of the various operations; the second corresponded to the elaboration of the tender documents detailing all interventions and bills of quantities.

The first proposed intervention aims to repair the infiltrations in the flat roof by removing all of the asphaltic layers covering the roof and the water channels and re-opening the four roof drains that were capped, in order to avoid water seepage on the lower floors through the damaged downpipes. The intervention also includes: (a) the removal of weeds that generated crack formation in several

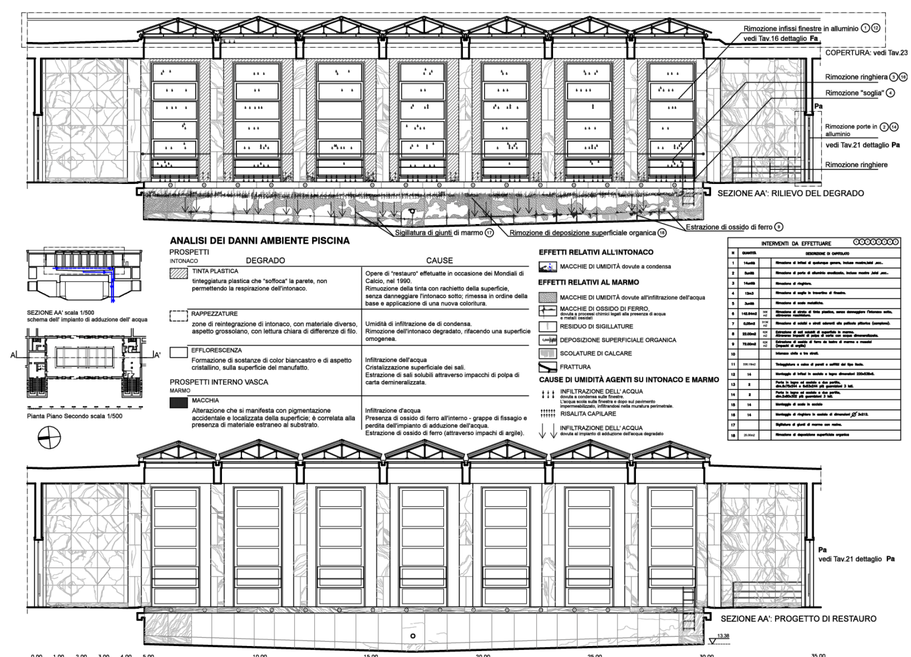


Figure 10: *Piscina Pensile*, survey of construction pathologies and conservation project, cross section. Source: Author.

[11] According to Paul Philippot's definition of restoration: as a critical hypothesis expressed in the operation itself, considering that, in the field of restoration, the critical interpretation of the work of art aims to concretize the critical action on the work, that is, the critical restitution of the "text", making it easier to read (CARBONARA, 1997, p. 329; PHILIPPOT; PHILIPPOT, 1959, p. 5-6).

[12] Article 6 of the ***Carta Italiana del Restauro*** (Italian Charter for Restoration) of 1972 expressly prohibits the alteration or removal of the patinas during activities for the safeguard and restoration of all works of art of any period (e.g., complexes of buildings of monumental, historical or environmental interest and their internal decoration, gardens and parks of particular importance).

[13] The abandonment or loss of the original function and, to a lesser degree, the substitution of one function with another that leads to further wear of the building are evident causes of the ruin of many old buildings. The assignment of compatible functions is ultimately essential to ensure its current maintenance and conservation.

elements in the roof; (b) the removal and reapplication of the degraded plastering on the parapet wall (to fix the breakdown of the first and second layers of plaster in certain areas, due to water seepage and growth of salt crystals between layers); (c) the correction of the roof slope; (d) the correction of the gutters slope; (e) the laying of new drainpipes inside the existing degraded ones; and (f) the laying of a bituminous layer, damp-proof membrane, thermal insulation and waterproofing screens that must extend to the perimeter ledges (and be duly sealed).

Given that the mechanized system of the skylight is severely deteriorated and that the assembled iron structure is obsolete, we proposed the dismantling, recovery and placement of the entire structure. In addition to this operation, we proposed the revision of the ventilation system, in order to reduce condensation phenomena inside the pool chamber, which constitute the major cause of the deterioration of the plaster. Only after the completion of these operations should the plastic paint (dating from the 1990 World Cup) be removed from the walls of the pool chamber, as it does not allow the plaster to "breathe" — this may be effected when the cause of the deterioration has been potentially eliminated. The removal of the paint should be carefully executed by mechanical means and followed by the restoration of the degraded plasters. The new antifungal paint should be similar in color to the light grey found in the lower layers of paint. The facades of this entire block should also be treated by removing the plastic paint, recovering the base where necessary (e.g., the deteriorated red pozzolana and lime plaster, the surface deposits of materials of various origins, the inorganic fouling and biological patina, etc.), cleaning it thoroughly and successively applying new paint.

New wooden and iron, double-glazed window frames were designed for the swimming pool chamber. Their painting was developed to withstand ultraviolet rays and to resist highly aggressive requirements. The added windowsills would be removed and the new frames set on the original marble windowsills and equipped with a new water drainage system. The door frames of the adjacent compartments associated with the swimming pool was redesigned, reproducing the original designs. The conservation project also recommends the removal of the linoleum coverings on the marble floor and the recovery of the "mended" areas in mosaic next to the drainage grids around the pool.

Successive stages of conservation interventions would include the modification of the water supply system of the swimming pool, by placing new pipes inside the existing ones in iron, which present considerable losses due to high levels of oxidation caused by the use of chlorine and hydrochloric acid in the treatment of water. The general project also determined, in the first phase of intervention, the drying up of the marble slabs in the pool, and in a second phase (in a dry ambience), the sealing of the marble slabs, with the recovery of those that have become fractured (due to the tension caused by the corrosion of the fixing system), and the cleaning of iron oxide stains in some marble slabs (due to chemical processes related to the presence of water and oxidized metals), superficial organic deposits and limestone residues (Figures 10 and 11), using clay patches with high extraction capacity.

Figure 11: *Piscina Pensile*, empty pool.
Source: Author.

Conclusion

The increase in water temperature in indoor pools is directly related to changes in the microclimatic requirements of these environments, which led to major adjustments in the design of swimming pools, such as the use of sophisticated technical facilities occupying larger areas and involving higher expenses in energy. The material and aesthetical consequences of this type of requirements and technological infrastructures on existing buildings, the stress provoked by the impact of new microclimate to which the building is exposed, the changes in the building's configuration whenever adjustments are needed in order to meet new requirements and keep the facility running (which is important for its own preservation over time) should always be duly considered and balanced.

In the case of a designated building, like the one considered in this case study, the suitability of various technical fields to the technological and aesthetical characteristics of the building and the need to preserve the entire organism (including technological facilities) as much as possible, in accordance with the principles of minimum intervention, reversibility and clear identification of the various intervention phases, constitute constraints of great importance for the definition of the conservation project. The viable solutions must be lucidly evaluated and strike a balance between the goal of pure conservation and the need to maintain this type of facility in working conditions, which are indeed difficult to reconcile.

References

ALTHÖFER, Heinz. *Il restauro delle opere d'arte moderne e contemporanee*. Translation by Massimo Tirotti; Reinhold Ferrari. In: MUNDICI, Maria Cristina (a cura di). Firenze: Nardini, 1991. 199 p. Translation of: Restaurierung Moderner Malerei.

BONELLI, Renato. Verbete Restauro (Il restauro architettonico). In: BRANDI, Cesare et al., *Enciclopedia Universale dell'Arte.* Venezia-Roma: Istituto Per La Collaborazione Culturale, v. XI, 1963. Available at: <http://www.webalice.it/maurizio.berti1/bertirestauro/03restaurmanut1/indirizzirestauro.html - Renato_BONELLI_Il_restauro>. Accessed: May 12, 2018.

BRANDI, Cesare. *Teoria del Restauro.* 2nd ed. Torino: Einaudi Editore. Roma: Edizioni di Storia e Letteratura, 2000. 154 p. [1st ed. 1963].

BUGLI, Dario. L'organizzazione dei mondiali di nuoto. *SpazioSport - CONI*, Roma, anno 13, n,3, p. 6-12, sett. 1994.

CARBONARA, Giovanni. *Avvicinamento al restauro*: Teoria, storia, monumenti. Napoli: Liguori Editore, 1997. 836 p.

CARBONARA, Giovanni. Il restauro del moderno come problema di metodo. *Parametro.* Rivista Internazionale di Architettura e Urbanistica, Roma, anno 36, n. 266, p. 21-25, ott.-nov. 2006.

CARBONARA, Giovanni. Alcuni temi di restauro per il nuovo secolo. In: CARBONARA, Giovanni (diretto da). *Trattato di restauro architettonico*: Primo Aggiornamento. Grandi temi di restauro. Torino: UTET Scienze Tecniche, 2007. p. 1-50.

CARTA Italiana del Restauro. Ministero della Pubblica Istruzione, Circolare n. 117 del 6 aprile 1972. Available at: <http://architettura.it/notes/ns_nazionale/anno_70-79/CIRC.117-72.html>. Accessed: May 12, 2018.

CASIELLO, Stella (a cura di). *Verso una storia del restauro*: Dall'età classica al primo Ottocento. Firenze: Alinea, 2008. 382 p.

DE SANTOLI, Livio. Aspetti impiantistici dell'ambiente piscina. In: GRATA, Aldo Del; GENTILI, Alberto (a cura di), ASPETTI TECNICI E NORMATIVI DELLA QUALITÀ DELL'ARIA NEGLI AMBIENTI NATATORI AL CHIUSO, 1999, Tirrenia. *Atti del Convegno*: Aspetti tecnici e normativi della qualità dell'aria negli ambienti natatori al chiuso: Tirrenia (Pisa): Centro CONI: 30 marzo 1999. Pisa: Felici, 2000.

DEZZI-BARDESCHI, Marco. *Restauro*: due punti e da capo. Milano: Franco Angeli, 2006. 496 p.

FRANCO DE MENDONÇA, Lisandra. *Piscina Pensile al Palazzo del CONI al Foro Italico*: Roma. Studio e Restauro. 2003. 24 p. A1. Master Thesis (Specialization in Restoration of Monuments) — Scuola di Specializzazione in Restauro dei Monumenti, "La Sapienza" Università degli Studi di Roma, Rome, 2003.

FRANCO DE MENDONÇA, Lisandra. *Conservação da arquitetura e do ambiente urbano modernos*: A Baixa de Maputo. 2015. 726 p. PhD Dissertation (PhD in Architecture and Urbanism and in History and Restoration of Monuments) - Instituto de Investigação Interdisciplinar da Universidade de Coimbra, Coimbra, Dipartimento di Storia, Disegno e Restauro dell'Architettura, "Sapienza" Università di Roma, Rome, 2016a. Available at: <https://estudogeral.sib.uc.pt/handle/10316/29573>. Accessed: June 21st, 2017.

FRANCO DE MENDONÇA, Lisandra. *Da Inconstância da Fortuna*. A Teoria e a Metodologia do Restauro em Contexto Europeu. *Cabo dos Trabalhos*, Coimbra, no. 12, 18 p., 2016b. Available at: <http://cabodostrabalhos.ces.uc.pt/n12/ensaios.php>. Accessed: June 2nd, 2017.

GRECO, Antonella; MURATORE, Giorgio. *Il Foro Italico*. Roma: Clear, 1990. 117 p.

GRECO, Antonella, SANTUCCIO, Salvatore. *Foro Italico*. Atlante Storico delle Città Italiane. Roma 1. Roma: Multigrafica Editrice, 1991. 95 p.

JOKILEHTO, Jukka. *A history of architectural conservation.* Oxford: Butterworth-Heinemann, 1999. 354 + xiv p.

KU¨HL, Beatriz Mugayar. *Ética e responsabilidade social na preservação do património cultural.* Paper presented at the XIII Congresso ABRACOR, Porto Alegre/RS, 13-17 April 2009. Available at: <https://www.yumpu.com/pt/document/view/20093096/etica-e-responsabilidade-social-na-preservacao-do-abracor>. Accessed: June 2nd, 2017.

KU¨HL, Beatriz Mugayar; SALVO, Simona. Ciclo de Palestras sobre Preservação: Disciplina AUH 852 - Técnicas Construtivas Tradicionais. *Pós*: Revista do Programa de Pós-Graduação em Arquitetura e Urbanismo da FAU-USP, São Paulo, no. 19, p. 198-210, jun. 2006. Available at: <http://www.revistas.usp.br/posfau/article/view/43471>. Accessed: June 2nd, 2017. DOI: http://dx.doi.org/10.11606/issn.2317-2762.v0i19p198-210.

MARTINO, Annamaria de. Rischi igienico-ambientali nelle piscine coperte e loro prevenzione. In: GRATA, Aldo Del; GENTILI, Alberto (a cura di), ASPETTI TECNICI E NORMATIVI DELLA QUALITÀ DELL'ARIA NEGLI AMBIENTI NATATORI AL CHIUSO, 1999, Tirrenia. *Atti del Convegno*: Aspetti tecnici e normativi della qualità dell'aria negli ambienti natatori al chiuso: Tirrenia (Pisa): Centro CONI: 30 marzo 1999. Pisa: Felici, 2000. p. 13-20.

PEDULLÀ, Di Stefano. La ristrutturazione delle piscine "mondiali". *SpazioSport - CONI*, Roma, anno 13, n. 3, n. 3, p. 15-18, sett. 1994.

PHILIPPOT, Albert; PHILIPPOT, Paul. Le problème de l'intégration des lacunes dans la restauration des peintures. *Bulletin de l'Institut Royal du Patrimoine Artistique*, Bruxelles, v. 2, p. 5-19, 1959.

PIACENTINI, Marcello. Il Foro Mussolini in Roma, *Architettura*, anno 12, fasc. 2, p. 65-74, feb. 1933 apud GRECO, Antonella, SANTUCCIO, Salvatore. *Foro Italico*. Atlante Storico delle Città Italiane. Roma 1. Roma: Multigrafica Editrice, 1991. 95 p.

REGNO D' ITALIA. LEGGE 3 aprile 1926, n. 2247. Istituzione dell'Opera nazionale « Balilla » per l'assistenza e l'educazione fisica e morale della gioventù Istituzione della Gioventù italiana del Littorio. *Gazzetta Ufficiale del Regno d'Italia*, Roma, anno 5 [anno 68º], no. 7, p. 86-88, 11 gennaio 1927. Available at: <http://augusto.agid.gov.it/gazzette/index/download/id/1927007_P1>. Accessed: Nov. 13th, 2018 apud GRECO, Antonella, SANTUCCIO, Salvatore. *Foro Italico*. Atlante Storico delle Città Italiane. Roma 1. Roma: Multigrafica Editrice, 1991, p. 72.

REGNO D' ITALIA. REGIO DECRETO-LEGGE 27 ottobre 1937-XV, n. 1839. Istituzione della Gioventù italiana del Littorio. *Gazzetta Ufficiale del Regno d'Italia*, Roma, anno 16 [anno 78º], no. 262, p. 4057-4059, nov. 1937. Available at: <http://augusto.agid.gov.it/gazzette/index/download/id/1937262_P1>. Accessed: Nov. 13th, 2018.

SALVO, Simona. Il restauro dell'architettura contemporanea come tema emergente. In: CARBONARA, Giovanni (diretto da). *Trattato di restauro architettonico*: Primo Aggiornamento. Grandi temi di restauro. Torino: UTET, 2007. p. 265-335.

SCARROCCHIA, Sandro (a cura di). *Alois Riegl:* Teoria e prassi della conservazione dei monumenti: Antologia di scritti, discorsi, rapporti 1898?1905, con una scelta di saggi critici. 2. ed. Bologna: Gedit. 2003.

TORSELLO, Benito Paolo, 2010. Che cos'è il restauro? In: BELLINI, Andrea et al. *Che cos'è il restauro?* Nove studiosi a confronto, da un'idea di B. Paolo Torsello. 3. ed. Venezia: Marsilio Editori, 2010. p. 9-17.

ZACHEO, Maria Itala. Appunti sull'architettura di Enrico Del Debbio (1928.32). *Storia della Architettura*, no. 1, p. 73-88, genn.-giugno 1982.

Acknowledgments

This study was conducted within the scope of the author's Specialization's dissertation in Restoration of Monuments, which was directed by Giovanni Carbonara. The project was co-funded by the European Social Fund, within the framework of the Human Potential Operational Programme for the Autonomous Region of Madeira (POPRAM III), and by a Master's grant awarded by the *Centro para a Ciência e Tecnologia da Madeira* — CITMA (Centre for Science and Technology of Madeira), Funchal, Portugal, with the reference 48/BM-3/2000. The project was also funded by the Italian Ministry of Foreign Affairs and International Cooperation, through the "Grants for Foreigners" Programme, 2001-2002, 2002-2003. In the captions of images taken from public archives, the allocation of the archive follows its designation.

Editor's note

Submitted: 06/26/2017
Acceptance: 10/31/2017
English revision: Celina Agostinho

Lisandra Franco de Mendonça
Scuola di Specializzazione in Restauro dei Monumenti. Sapienza Università di Roma. Roma, Itália.
lisandramendonca@gmail.com