MATERIALS AND TECHNIQUES USED IN THE 17th CENTURY RESTORATION OF SCULPTURES FROM THE ANTIQUITIES COLLECTION OF THE PALAZZO LANCELLOTTI AI CORONARI.

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Abstract

The restoration of an earlier restoration becomes the occasion to reread a treatise on sculpture from the seventeenth century. A precise analysis of the work serves as a guide to understanding the technical phases and the logical composition of Baroque-era restoration. Coupled with this is a reading of the traces left by the tools during restorations, distinguishing superimpositions from concealments, in order to decipher the changes that occurred between the ancient work and its seventeenth-century interpretation. The sculptures, which are the subjects of this work, have, for all their differences, been studied using a single method which sees in any given restoration a moment of historical-critical recognition. It is an exclusively technical analysis of the data, an investigation based on the gathering of the material data taken from the work as a whole (the wall, plasters, marbles, stuccoes, paintings), stratigraphically organized and chronologically compared in order to contribute to the study of the collection.

The restoration of the sculptures of the Palazzo Lancellotti presented a unique opportunity to study the constituent methodologies and techniques of reconstructive restorations of the seventeenth century. The Lancelotti Collection is a special case in that the palazzo has always remained in the hands of the family that built it. The original nucleus of the collection goes back to the time of Cardinal Orazio Lancellotti, and represents the integral part of the decorative apparatus put in place by the architect Carlo Maderno around 1610 that adorns the atrium, portico, courtyard, grand staircase, and loggia. The statues and reliefs that remain, therefore, retain a particular interest because they are closely related to the architecture and to the historical vicissitudes of the palace. The uncommon opportunity to work on a single collection that can be documented by the family’s archive was above all an important means to deepen our knowledge of the techniques of the period.

The decision to initiate the restoration from the western wall was not a casual one. Beyond the initial need to secure and preserve certain gravely damaged statues, this wall, particularly since it faces the main door and serves as both backdrop and principal focal point from the street, appeared more complete and less tampered with than the others. Elements belonging to the original context are still present in the wall; therefore, it could have been the starting point for various considerations, not only the technique but also the history of the collection.

The western façade of the courtyard now includes eleven marble items: three statues of men in togas and a female statue placed directly on ground level, two nudes in the ground floor windows spaces, two busts in oval niches in the tympanum, two bas-reliefs in stucco frames in the upper order, and a large head above the central arch. The eleven sculptures in varying states of conservation are eleven different “cases”, but they have been approached with a single criterion that sees in the act of restoration a moment of recognition of the work through the knowledge of the working technique and of restoration history. This is a “philology of materials” that analyzes the object stratigraphically, as in an archeological excavation, placing and organizing the data in order to confront and understand it. This is research that distinguishes between recurring and accidental datum and searches for a relationship among various phenomena. Restoration becomes a matter of investigation, of reconstructing a material history by studying artefacts seen not as isolated objects but as parts of a whole that includes marble statues, wall surfaces, frames, stucco, plaster, and paintings together to reveal just as much of the story as documents do. The recognition and the understanding of the work was therefore a relevant part of the undertaking. We insist on the importance of historical-critical analysis in restoration precisely because in the course of this study we assert the difference between the Italian approach and the Swedish approach which relies largely on the technical-scientific aspect of the restoration process.

1 Hibbard 1970.
It is important that whoever executes potentially “irreversible” restorations, which is to say destructive restorations, like the cleaning or removal of stucco or so-called “unsuitable” elements, be aware of the techniques used at the time of construction. In our case it was essential to distinguish between the ancient sculpting techniques as indicated by the marks made by the instruments from the techniques of seventeenth-century restoration, or the art of commettiture. This is a branch of sculpture, which from the sixteenth century also acquired economic importance and became a practice of specialized workshops until it became, in the seventeenth century, an artistic technique in its own right proudly advertised as such by its practitioners. From Orfeo Boselli to Bartolomeo Cavaceppi and on to Carradori, through the work of many unknown sculptors, this discipline was handed down and perfected over time, with materials that remained essentially the same for centuries. These materials were then suddenly and completely forgotten with the advent of cement and synthetic resins. Our contribution, through the practice of restoration, is to determine the different marble elements that make up the work, to distinguish the ancient parts from the modern ones, and to indicate the extent of the reconstructive restoration. We also want to give an account of the pilferings and reworkings that contributed to the changing of the Roman composition compared to the Baroque one. The works analyzed are complex artistic creations, in which restoration borders re-elaboration. They constitute in themselves new sculptures to be read as wholes, even in the analysis of their parts, and not only as an assemblage of archeological fragments. We wanted to verify the compositional technique of this group of sculptures, comparing them to the prescriptions of the treatises of the period. We have examined the texts of Raffaello Borghini, Agostino del Riccio, and, above all, Orfeo Boselli, who is closest to the works in question.

The relief with hunting scene
The relief is located on the left side of the facade in a curvilinear stucco frame with large masks (mascarone) and girali designed by Maderno. Careful observation reveals that the relief is composed of twenty-four fragments rearranged to form two large sections. The right part contains the bears and two hunters on horseback, of which the one on the left is a not contiguous and perhaps not even pertinent fragment whose edges have been reworked. This part is cut at the top at the height of the horsemen's heads and below beneath the limbs of the animals with the result that they appear to be maimed. Furthermore, the net that enclosed the wild beasts has been eliminated and the corners reconstructed with two modern insertions in veined Carrara marble worked with a chisel in a manner similar to the scene of trees above and the fur of the bear below (plate 1, figs. 1-2). The left part is composed of fifteen variously-sized fragments, of which the three largest ones, the rider with a chlamys on the left, the beater on foot with a fur cloak, and the rider on the right, are contiguous to each other. The last two heads, probably in large-crystal Greek marble from Thasos, are not pertinent as they are insertions of different provenance. The entire lower portion is reconstructed with non-contiguous insertions of differing marbles that have been readapted. The lower edge, although made regular, nevertheless appears shorter, so that the dogs appear without their paws. The upper edge, on the other hand, should be complete as it includes the tops of the trees in the scene.

Traces of reworking can be noted on both blocks where stones have been taken away, especially where there were joints between ill-fitting fragments, this having been done to eliminate differences in height and to make the parts fit together better. Other areas - the two short cloaks, for example - seem rather flattened, perhaps in order to smooth out some ruined surfaces. Although not adjacent, the two blocks that compose the relief seem to belong to the same sarcophagus. The warm, white, fine-grained marble with the occasional subtle veins of a light grey colour is identical in both cases, and has been identified as a white Carrara marble. From what was revealed during the course of the restoration, the fragments are stuck one to the other with a resinous compound made principally of colophony and marble powder of a yellowish-brownish colour, affixed with iron pins.

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2 Regarding the history of restoration of ancient sculpture, see the still-fundamental Rossi Pinelli 1986.
3 Borghini 1584.
4 Del Riccio 1597.
5 O. Boselli 1650.
6 The frame is made on a brick structure that projects from the wall with a body made of pozzolana mortar with a rough granular quality, then a finishing layer of lime-stucco and thin marble powder finely worked and flattened. The frame rests on a pozzolana plaster colored with a whitish-yellow lime executed with a thick wavy brush stroke to confer a vibrant and luminous rustic effect. This original plaster is still preserved in large swathes here as on the other walls underneath the many layers of painting of the courtyard. Marble, stucco, and plaster belong to the same period of construction and characterize the material and color of the courtyard’s ornamentation.
7 The identification of the stone is by Domenico Poggi, Artelab, Roma.
Plate 1

The Hunt Relief after conservation.
Measures of the marble slab: height cm. 72,5 ; length cm. 160,5

Drawing of the different marble elements:
reworked inserts of the same antique marble (Carrara) = light grey
inserts in a different antique marble (Tasos) = medium grey
modern marble inserts (veined Carrara) = dark grey
stucco additions = the darkest grey.
The contiguous fragments have a subtle line of conjunction of approximately two millimeters, whereas the readjusted fragments and the restored insertions demonstrate a less precise juncture of around four to five millimeters. The junctures were accurately sealed on the surface with a thin white stucco that was very evident. Where the stucco work was still present, the adhesive material was found in good condition, solid and compact.

The relief, recomposed in two parts as described, was anchored in the masonry with large nails and along the edge with iron L-shaped clamps, some of which are visible as they are not covered by the frame. Some small gaps in the marble due to breakage that occurred after the seventeenth century restoration, as can be seen in the ears of the horses, the shaft of the spear, parts of the feet, were repaired with a dark stucco.

The seventeenth-century composition, as argued by M. Barbanera, does not take into account the scansion of the ancient hunting scene. The sculptor was careful to reconstitute a whole in the simplest manner possible. In the elimination of a fracture, he also eliminated a pause in the text and created a new unitary rhythm. The hierarchical order is lost; the dominus could as well be at the edge as at the centre of the scene. Changing the order of the fragments does not change the result. The hunting scene must have been much more developed and complex, but evidently here only the more important and well-preserved fragments were used, unless the sculptor managed to exploit the material from the same sarcophagus to make more than one composition.

The closest parallel from an iconographic point of view, even if distant from the stylistic point of view, is with a sarcophagus relief reused in the Casino del Bel Respiro in Villa Doria Pamphilj (plate 2, fig. 1). As though made from an identical ancient template, we can observe here the same sequence of the group of hunters with the bear hunt on the left, and we recognize the same characters with identical details, such as hairstyles, cloaks, and gestures, like the cautionary hand on the shoulder. We then understand the curve cut on the right edge of our relief which eliminated the net --fragile because made of fretwork-- the tree, and a figure. The right section with the deer hunt is entirely missing. Altogether, the seventeenth-century composition is shorter by a third compared to the entire unfolding of the ancient scene, also because each of the two sections are cut down, the one on the left from the bottom, and the one on the right from both the top and bottom (plate 2, fig. 2).

In the storerooms of the Museo Nazionale Romano there is a fragmented sarcophagus with a hunting scene from Torre Maura (via Collatina, inv. n. 372546), found in 1986 not, however, in its original site but in a deposit of pieces readied for reuse. Already in 1980, B. Andreae had published the images of three fragments from the Museo Nazionale that were later discovered to belong to the same sarcophagus. In 1990, the restored piece was exhibited at the Museo Nazionale Romano (plate 2, fig. 3). Its total dimensions measure 246 centimeters in length by 92 in height. The length of the Lancellotti relief is 160.5 cm. by 72.5, not including the stucco frame. Here the comparison can maintain a certain stylistic affinity, although a different model was used. The comparison is useful to understand some particular details of its fabrication that otherwise would not be very clear, such as the foreshortening of the rear of the horses so that they might appear as though emerging from the trees, and the angular solution by which the figure of one of the riders is sculptured in bas-relief on the short side of the relief then turns and is represented in high relief on the front. A similar effect can be seen in the Lancellotti relief where the third horse on the left exhibits slightly curving elaborations on the rear that seem to recede into the background. If this were the first figure on the left of the front of the sarcophagus, the curvature could have been part of the original Roman work, and not a seventeenth-century attempt to join two non-contiguous fragments.

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8 See the contribution of Marcello Barbanera in this publication
9 Calza 1977, n. 229; Andreae 1980, table 95, fig.1.
10 Di Mino, Bertinotti 1990, 94, cat. 69.
Plate 2

Sarcophagus with hunt scene from Villa Pamphilj.

Reconstructive drawing of the entire sarcophagus Lancellotti.

Sarcophagus with hunt scene from Museo Nazionale Romano (inv. n. 372546).
The Relief with Amazonomachia

This relief is on the right side of the facade in a frame similar to the one on the left. Its frame closes and completes the relief, continuing in stucco some details of the marble decoration. The sculpture represents an Amazonomachia, specifically the central episode of Achilles and Penthesilea. It consists of two large fragments probably in large-crystal Greek marble, rejoined and combined with minor insertions, twenty-three fragments in all (plate 3, figs. 1-2). The irregular shape of the two largest fragments has been completed along the upper and lower edges with four long insertions in Carrara marble worked in bas-relief with weapons in order to fill the space. The work has been done with a large pointed chisel, and the surface has intentionally been left rough. The block on the left includes an Amazon on a horse and the Achilles-Penthesilea group whose inserted but not pertinent heads form the upper edge.

Two inserts in Penthesilea's legs and two angular segments on the left are in Carrara marble, and were worked in the seventeenth century. The little Amazon also has a head that does not belong to its body and was probably taken from the same frieze, as were the three fragments that recompose her leg. The slightly smaller block on the right represents an Amazon on a horse faced by a Greek with the figure of a dead soldier inserted in the lower part above the weapons. The leg of the horse and the arm of the Greek seem to be pertinent fragments that have been replaced. An extensive reworking of the marble surface behind the Greek soldier and below the Amazon has reduced the width of the relief, eliminating left-over elements that had perhaps been broken off in order to link it to the new parts made in bas-relief. The Baroque sculptor reused the two fragments, recutting and straightening them with a rotation of approximately 45 degrees with respect to their original positions. In this way the composition seems to represent a rape rather than the death of Penthesilea, thus losing the element of pathos in funerary relief. This restoration was also done with the same technique as on the other relief: a preparation of the surface of the fracture with chisel, pinning with iron bars, gluing with a compound of colophony, and final carving of the insertions in contact with the original part with precise and accurately stuccoed commettiture.

In the Amazonomachia the rather extensive reconstructed parts were executed with discretion, both in the choice of the bas-relief work and in the rough finishing, even if we have to keep in mind that the adopted solution - more decorative than interpretative - along with being perhaps the most fortuitous, is also the simplest, and that restoration at the time did not take into consideration the difference of the various materials. Both reliefs have the same system of montage, and the method is by no means accidental. The reconstruction in two sections divided the weight of the relief for easier installation and facilitated the process of anchoring it to the wall. Even so, long iron clamps secure the piece along the edges. The joint between the two principal fragments is quite large because the two parts do not correspond, and is filled with stucco. From this gap we could see that the marble blocks have an average width of more than 12 centimeters, and that they are walled-up with pozzolana mortar mixed with brick chips. The insertions that are placed along the joint were the last to be mounted. The head of the Amazon in particular was redone many times. In its present state it is extremely eroded and fragmentary. It is made of marble-powder stucco, but we have found traces of earlier montages with yellow stucco and plaster with the hole for a pin in the neck. Compared to the drawing published by Robert, that dates to 1886, we can note that a hoof and the heads of the horses and the arm of the Amazon on the right, together with some details executed in stucco on the right edge of the frame have fallen. Furthermore, the worsening erosion of the stone is evident and verifiable in the loss of definition of the faces and of some details such as Penthesilia's shield and the Greek warrior's helmet.

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11 See Barbanera in this publication.
12 Robert 1890-1904, 123-124, fig. 100.
Plate 3

The Amazonomachia Relief after conservation.
Measures of the marble slab: height cm 85,5; length cm 156,5.

Drawing of the different marble elements:
- reworked inserts of the same antique marble = light grey
- inserts in a different antique marble = medium grey
- modern marble inserts (veined Carrara) = dark grey
- stucco addition = the darkest grey
Plate 4.

Achille and Pentesilea: details during conservation
The two Lancellotti reliefs are illustrative of a consolidated restoration practice which we find described by Boselli’s Osservazioni de la scolatura antica, book five.15 His treatise is very detailed but, most importantly for us, it was drafted from his direct experience as a technician, which is to say he did not limit himself to merely telling of methods which he in turn explains. The ways of restoring ancient bas-relief are explained in chapters XIV, XV, and XVI. The major difference and difficulty lies with the width of the relief that has to be reconstructed. If it were a “lavoro dilicato, di tavola sottile” (“delicate work, on a thin slab”), as explained in chapter XIV, it was necessary for its safety to be attached with plaster to a marble slab three fingers wide. The supporting slab served as reinforcement in order to withstand the blows of the carving tools, “perché sempre lavorando si corre manifesto pericolo di spezzarla, in specie dove sono i perni, et in conseguenza in cambio di restaurarla rovinarla affatto” (“Because in working it there is a clear risk of breaking it, especially around the pins, and consequently ruining it instead of restoring it”). In our case the fragments from the sarcophagus are of a consistent width, so it was not necessary to add the reinforcing slab. The piece is so thick as to be capable of withstanding the insertion of pins without the risk of breaking. It is suggested for greater stability that iron bars (“spranghe”, U-braces placed laterally) should be added and sealed with lead, which have the added advantage of not being visible when the relief is in the wall (ch. XVI).

Naturally, the most important aspect of this kind of restoration is the reconstruction. The accuracy of the insertion and the precision of the joints depend largely on the quality of the preparatory work. First of all, the joints are executed “diligently”, which is to say the regularization of the fracture, and the preparation of the part receiving the insertion, thereby creating a flat area with a surface textured by a stonemason’s chisel or by the chisel to aid adhesion. Then one begins to work the insertion. Boselli writes that even for detailed work on bas-relief, “vi faccio prima i Modelli stability...” (“I first make the established models...”), an indication that it was best not to sculpt directly, but to have a model in order to transfer the measurements to the new marble. Once having drawn the new piece close to the old, it is temporarily held in place with plaster while continuing to be roughed out to a certain point, but not completely. Then a hole is made in the ancient piece, marking it with an X, while making another hole in the corresponding piece. It is very rare that parts, even tiny ones, are attached without resorting to pins.14 The text explains that the need to insert pins is not only a matter of the stability of the attachment, but also a matter of securing the sculpture in the final phase of the operation. In the relief of Achilles and Penthesilea it is clear that some parts, such as the arm of the Amazon on the left, or the arm of the Greek, for example, have never been reconstructed because even if the fractures have been made regular, the hole for the pin does not exist. Boselli’s pins, as well as those we found on the relief, are made of iron, while the ones recommended by Borghini are to be of copper or bronze, “perché la ruggine col tempo allarga il marmo” (“because over time rust enlarges the marble”).15 The measurements are always greater than the weight they have to support: “...con peccare piuttosto di prodigo che di avaro. Si avvertirà però in tutti li Casi, che il Perno sostenga il pezzo da sé senza mistura, che sostenendo con la mistura poi, sarà bene assicurata l'attacatura” (“to err rather toward the generous than the stingy. But be warned that in all cases, the pin needs support the piece by itself without mixture, then with the mixture its adherence will be better assured”).16

Let’s now turn to the compound, which is a gluing mixture of Greek rosin, rough wax, and marble powder. The rosin, or colophony, is a natural resin extracted from various conifers, like larch and pine. It has been used throughout Europe since antiquity. In Boselli’s recipe, the ratio with wax is two libre of colophony to a 1/2 oncia of wax, that is 678 grams of colophony to 14 of wax, i.e. 48 parts rosin to 1 of wax.17 In Riposo, Borghini gives a recipe with different measures in which he adds turpentine in the following ratio: 3 libre of rosin, 6 once of wax, 4 once of turpentine.

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13 Orfeo Boselli 1597-1667, Roman sculptor and restorer, member of the Accademie di San Luca, wrote the treatise Osservazioni de la scolatura antica around the middle of the 17th century. Four copies of the manuscript, which remained unpublished, have been found: two in Rome in the libraries of the Corsini and the Doria, subsequently published by Ph. Dent Weil in 1978, one at the Biblioteca Ariostea in Ferrara, and the fourth in the Biblioteca Nazionale in Florence which was published by A. Torresi in 1994. The Corsini manuscript is the most complete and contains the last book with the chapter on restoration. See, moreover, Rossi Pinelli 1986, Martellotti 1986, Giuliano 1992, Rinaldi 1996, Sparsi 1998, Fortunati 2000, Di Stefano 2002, Picozzi 2003.

14 Boselli ivi, libroV, cap. XVIII, f.174v. “Ma perché radissime volte, si attacha pezzo che non ricerchi di havere il suo perno adeguato di questo darò notizia. Perno chiamano un ferro o piccolo o mezzo o grandezza che sia quale si pone di dentro fra l’un pezzo e l’altro, quale rende durevoli l’attacatura, e più assicurato il maestro a lavorare”.

15 Borghini 1667,137

16 Boselli ivi, libro V, cap. XVIII, f.174v.

17 Boselli ivi, libro V, cap.XVIII, f.174r “Metterai in una pila, o vasetto di rame ove non sia stata altra cosa, libre doi di pece gregu da Cassa, la più chiara e polita, che tu trovi et meno di mezza oncia di cera gialla...” 1 libbra = 339,07 grammi; 1 oncia = 28 grammi.
While Del Riccio mentions turpentine, rosin, and yellow wax in addition to mastic, a resin extracted from *pistachia lentiscus*, he does not provide the proportions of the ingredients. Both authors convey this information indirectly. Of the various ingredients, colophony provides adhesion, the wax malleability. The marble dust works as a thickening agent. The compound has to be applied while warm, and the marble must be brought to a certain temperature which "postavi la mano o dita per attastare, poco tempo possi soffrire il calore" ("putting your hand or fingers on it as a test, it won’t be long before you can’t stand the heat"), with the warning that "il marmo nuovo vol foco lontano e lento, altrimenti crepa" ("the new marble demands a slow and distant fire, otherwise it cracks"). This explains the difficulty of the enterprise, from which derives the word, still used today, *impeciare*, to dirty or soil oneself and other things.

Working on a horizontal surface, as when attaching the reliefs, the operation seems simpler, but working on the vertical presents various problems, to be examined later. The area has to be carefully prepared, the position tested, and the movements confident. The time available in which to place the pieces before the rosin cools and hardens is brief, but long enough to allow for a correction. In any case, one can always reheat the part being worked. Today we would call this a reversible material. When the drippings and the extra glue have cooled, they are cleaned with a tiny chisel, and the sculpting of the insertion is completed “levando la pietra a favore dell’attachatura…con diligenza…per non schiantare le Comissure” ("removing the excessive stone taking care not to break the joints").

All of the joints must be cleaned and filled with a mixture of white wax and very fine marble dust, applied with a warm iron. The accurate sealing of the joints was not only an aesthetic matter, because the dark-colored binding agent “è brutto a vedese” (“is ugly to look at"), as Borghini says, but it guarantees the impermeability and duration of the adhesion. Also on the two reliefs, we have found thin white stucco on the joints, attached with colophony. The only phase that we did not succeed in determining was that of the coloring phase, probably because over the years the reliefs were cleaned as a matter of routine maintenance, and also subject to new whitewashings, so that the thick dark patina we found unfortunately does not date from the seventeenth-century restoration, even if it shares a similar quality and composition. Boselli’s recipe consists of a tint based on *provatura*, lime and water with an addition of tuff-powder, or otherwise stone or brick, making a “sodetto” (“firm”) impasto that can be spread with a brush. Then there was a second trick of the trade, what today we would call a *velatura*, a wash more liquid, made of soot boiled in water (in vinegar, or better yet in urine, according to Borghini). As to anchoring objects to the masonry, mounting the slab in two sections is a very unusual solution which we had never seen before. It seems a practical device invented more by a mason than a sculptor, which perhaps demonstrates how, at the time, the workshop of Carlo Maderno at Palazzo Lancellotti was an open workshop where different artisans were in the habit of working together, something also demonstrated by the details of the stucco finishing on the frame, or in the installation of the last fragments.

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18 A yellow-brownish film covered parts of the reliefs that had been less exposed to the rain. The fact that this patina covered both the marble and the subsequent reconstructions in stucco on the reliefs and the frame proved to us that we were not in the presence of an original patina but of a treatment from a later intervention

19 Cheese, according to Torraca, 1986, 36.
Statue of male nude in the south window

In the space of the left window on the ground floor is situated the statue of the male nude (2.20 meters in height including the base) with a bearded face and strongly marked features. The athletic body is poised on the right leg, supported by a trunk behind it. Its left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward. The right arm is bent and the hand on the hip. The left leg is slightly flexed forward.

The statue is made up of an ancient torso in pentelic marble to which the head and the limbs were added during the course of the seventeenth-century restoration. The leg, the tree trunk, and base were all quarried from a single block of pentelic marble, sculpted from a clay guide model moulded in direct contact with the torso. The arm and the head, however, are made of different recuperated pieces of marble adapted to the bust through the insertion of wedges. Even the non-pertinent head is composed of ancient marble, most likely Lunense marble, but completely reworked, with fresh chisel and gradine marks still visible.

The statue of conservation of the statue when the restoration was undertaken must be pointed out. The lower block of marble showed various fractures at the base and at the feet, which had at one time been restored. The iron bar at the base had been reinserted, the joints of the thighs reconstructed, and a brace added and yellow stucco applied after reworking the joints with a file. The back revealed two large lacunae at the level of the scapulae of which the right was reconstructed with the same type of stucco. Another reconstruction in stucco, almost completely ruined, was found in the area of the groin, replacing the original marble insertion.

This complete summary also indicates how the statue had been moved and the base broken and the joints split, thus requiring a further restoration. The materials used for the stucco in this earlier restoration (yellow stucco with white finishing on top) are identical to those found on other statues in the courtyard, the other nude, the togati, and the reliefs.

Statue of male nude in the north window

In the opening of the window on the right we find the nude statue of a young male figure slightly larger-than-life proportions (2.20 meters in height from the top, including the base) with a chlamys on the shoulders and draping down the left. The figure is poised on its right leg, with the left shifted slightly forward yet connected at the rear to a supporting trunk. A strap crosses the chest. The left arm is bent in a lowered position, while the right is raised with the index finger pointing up. The head has thick hair and is turned toward the right, the gaze cast upward following the line of the hand. The torso, from the neck to the thighs, together with the mantle which is only partially inlaid, is ancient and sculpted of pentelic marble. The head, arms, and legs, together with the base, were added in a latter-day restoration. The front and the back of the muscled body are sculpted with an equal degree of accuracy. But the drapery on the back is interrupted, and shows signs of a stonecutter's chisel, perhaps as a consequence of having eliminated something extraneous to the seventeenth-century composition. The legs with the trunk and the base were sculpted from a clay model made directly in contact with a single block of recuperated Lunense marble, probably an architectonic element, the moldings of which are visible on the back of the tree trunk. The arms were sculpted of veined Lunense marble that may have been reused. The arms were attached to the body with wedges. The ancient but not pertinent head is made of different fragments: nose, mouth, chin, and neck are insertions executed in a perfectly embedded marble. The surface has been extensively reworked, and shows file marks on forehead and cheeks. The eyes have a incised irises and carved pupils. The hair shows signs of the gradine. The drill-holes are not very deep. In certain places the locks are interrupted and flattened, evidence of having been reworked. At the nape, where the head is grafted onto the shoulders, it is evident that this is not at all pertinent to the rest of the body, both because the inclination of the head does not correspond to the curve of the shoulders, and because the head is too large for the neck. The disproportion between them is compensated with a stuccowork that lengthens the hair to the point that it covers the shoulders. The larger elements of the restoration are joined to the torso with squared forged iron pins with a width of more than two centimeters, blocked on one side with lead, on the other with a colophony-based mixture. The smaller inserts are all secured with colophony with little bronze pins, often doubled, the second of which is placed in order to prevent rotational movements. It is a complex work of assemblage involving pinning of all the joints, the neck, shoulders, thighs, and mantle.
Plate 5

Male nude statues after conservation

Drawings of the marble elements
Plate 6
Statue of young nude male, details during conservation.

The committiture of the head

The pin of the left arm

The pin of the right arm
We found the work severely damaged, with fractures at the point of attachment of the legs, the left arm, and the right hand, with marble elements detached from the right thigh. As with the other statue, also in this case, the fractures seem to have been caused during transport of the statue which, provoking the opening of the old joints, started the deterioration of the iron elements. Oxidation, together with the thermal dilation and the progressive invasion of water, produced over time the rupture and detachment of the marble in the critical points. There were visible traces of an old restoration with yellow stucco and superficial white finishing similar to that noticed on the other nude, the *togati*, and on the reliefs. Other successive interventions, made with little skill with gesso and cement to glue the detached parts had worsened the situation, initiating a further process of chemical degradation. The state of conservation of this sculpture was quite grave with the risk of fractured parts falling off, so it was necessary to break down the old restoration in order to remove or to render inert the metal elements. Consequently, the statue was removed from where it was positioned and placed in traction. During this process of breaking it down, the knees were detached, and the torso was separated from the lower block and from the arms. The internal situation of the stone insertions allowed us to verify where the elements had remained sealed the gluing material and the pins were in good condition. On the other hand, where the joints were opened, the gluing compound was degraded to a dusty state with no binding power.

The breaking-down was the occasion to retrace the process of the seventeenth-century restoration, and to employ a method which, although distant and different from ours, ended up revealing its internal logic to us. First of all, holes are made in the torso in which to insert the temporary iron supports to sustain the torso and to make a model. Then it is raised in order to study the figure and to make a model without the obstacle of the fastenings. Boselli suggests the insertion in a hole previously made in the neck of an *olivella*, or iron ring, through which a rope is passed in to hoist the torso to the desired height, place in the holes the iron bars well-anchored to a square table that will temporarily support the model. The table also serves as the base on which the soles of the feet of the figure will be placed. The model is built around a core of hay and clay in successive layers that must be thoroughly dried. In order to prevent it from cracking, the clay is mixed with cavallina (horse manure) and *cimatura* (shreds of fabric). Once the model is made on its base, and its axis of balance established, the base is precisely squared, because from this the measurements for the marble are derived. Having taken the correct measurements, the work is roughed-out the work and then taken to a more advanced level. It is only at this point that the model can be taken away and substitute with the marble, finally joining, pinning, and attaching it. The final stage of the work is curving the insertion close to the ancient marble. The author strenuously insists on the care necessary to insure that the work is perfectly concluded, recommending that “alla fine fanno più due colpi dati in opera, che mille fuori dal sito” (“in the end two strikes then and there are better than a thousand around and about”). 20 In both the statues examined it is evident that the lower part of the legs and base were executed from a model, as the sculptor saw fit, in direct contact with the ancient piece, in keeping with the description above. On the contrary, the arms and the head, having been recuperated from elsewhere and readapted, do not adhere perfectly to the torso, to which they are joined by either stucco or wedges, being connections between parts that do not correspond. Orfeo Boselli, perhaps because it is considered unworthy of a sculptor, does not discuss this second system.

The systematic analysis of the montage reveals a technique of fixing the structural element, which, with the same pin, uses two diverse materials, such as lead and colophony. The lead seems to be used to block the pin without warming the marble where the holes face upward, that is to say where it is possible to pour the melted metal without risk of it spilling, as on the shoulders. The rosin-based adhesive mixture, on the other hand, is used in the mobile element of the adhesion, that is to say in the insertion, in this case in the hole of the arm on the other side of the pin. Therefore, we can hypothesize a sequence that contemplates first the insertion of the pin blocked with lead in the fixed side in the shoulder, and afterward the filling of the hole in the arm with the adhesive mixture. At the moment the arm is to be joined to the shoulder the two marble parts and pin are heated to a temperature sufficient to melt the rosin but not the lead and to allow the iron piece to be inserted into the arm as the arm is joined to the shoulder. In a few minutes the mixture, as it cools, will fix the arm in the desired position. With the legs, however, the procedure is different. The pin is affixed to the higher part of the leg with the mixture, which is applied in a semi-solid state or better in the shape of a cylindrical stick (like the pastel described by Carradori), 21 because it is not likely that the statue was turned to avoid

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20 Boselli ivi, chap. XX, “Modo di restaurare le statue antiche” f. 175v, 176r
21 Carradori 1802, art XI, p.XXIX: “…quindi si lascia sopra una lastra bagnata colare un poco della calda mestura, per farne due pastelletti da porsi dentro ai buchi nei quali ha da entrare il perno”.

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drippings. Afterwards, the same mixture, hot and in a liquid state, is poured into the lower part of the leg, where it does not drip, and the statue is quickly lowered so as to introduce the pin, until the cooling of the compound blocks the fitting. During the work, some samples of the adhesive compound from different places and in different states of conservation were taken in order to establish their organic and inorganic components through infrared spectrophotometry (FT-IR) and X-ray diffractometry (XRD). In all of the samples the adhesive material was revealed to be composed of colophony, marble powder with a homogenous grain, and wax. The wax is present in small quantities, while the colophony and marble powder are the predominant components, as demonstrated by all of the analyses performed and by the examination of the cross-section.

The correspondence between Boselli’s text and the adhesive mixture that was found in the statue leaves few doubts as to its nature, but raises a number of questions as to the proportions in the composition of the recipe used, in relation to its fluidity and workability. It is important to study this aspect not only for historical knowledge, but also in order to verify the possibility of using traditional materials in present-day restorations, in respect to the prerequisites of compatibility, durability, and reversibility according to the modern criteria of conservation. Therefore, experimental tests were undertaken in order to recreate the mixture, using a compound of colophony strengthened with Carrara marble powder of a very fine grain. Both Borghini and Boselli offer recipes with proportions, each different from the other though in agreement on the matter of reducing the quantity of wax to rosin; nevertheless, following their indications precisely did not lead to satisfactory results, because a large quantity of colophony makes the mixture rigid and fragile. Increasing the quantity of wax indicated in the original recipe results in a mixture with great adhesive force and strength that is efficient, versatile, and suitable to different restoration practices: for a mixture with a heavier consistency that can be applied with a spatula, it is useful to increase the proportions of the fine powder and the wax; and vice-versa for a fluid mixture, as one would use for inserting a pin, it is preferable to reduce the overall strength and increase the level of colophony. The efficiency of the mixture and its reproducibility are largely a matter of the person in charge, and are in no way comparable to the standard of an industrially produced resin.

In the course of the work we were in any case able to establish something important: the great durability of this material, which resisted for almost 400 years the condition of being outside and exposed to atmospheric conditions with extreme variations of temperature and to destabilizing events. This element would seem to require an in-depth investigation through further study of the composition and its physical-mechanical performance compared to the performance of synthetic products. We will not linger on the togati, which have been studied by A. Freccero, but for a peculiar technical detail relative to a description by Boselli of the “Modo di restaurare statue vestite, e quando vi manchi la base” (“Way of restoring draped statues that have no base”), ch. XXI, which is particularly suited to the case of M. Antonius IIIvir whose figure has been cut at the feet and imbedded in a recuperated base that was probably secured with gypsum. The analysis of the two busts and of the head consists mostly in drawing attention to the tools that were used on it, and in the reading and interpretation of their resulting traces, which were similar even though from different periods.

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22 The investigation has been conducted by CNR, Istituto per la conservazione e la valorizzazione dei Beni Culturali, under the direction of Anna Maria Mecchi in Rome and Susanna Bracci and Fabio Fratini in the laboratory near Florence.

23 Boselli ivi, cap.XXI “Ma tra tutte le difficoltà non mi pare la minima, quando si deve rifare la base alla figura, perché se a scantonata li pezzi rifatti mai vi stanno, con periglio che la statua caschi; onde convieni incastrarla entro un’altra base per bene assicurarla. Si fa dunque la Commissura ne la antica, levandone sotto il finimento de’ Panni acciò (come dissi) si occulti la attaccatura, poi si segna attorno lo spazio della incassatura, e si fa la cassa provando sino a che torna bene. Qui la difficol tä si riduce a porvi il foco per scaldare le basi, il quale per la sottigliezza della incassatura fa crepare il lavoro con danno disgusto e pericolo, si che io in tal caso consiglierei attacare con gesso, et al fine, o di sopra se si puo, o di sotto poneri doi boni perni o con piombo liquefatto e ribattuto, e così assicurarle per l’eternità, che è il fine della scoltura.”

24 We will limit ourselves to a few technical matters that emerged during the restoration, whereas for the study of the sculptures we hereby refer you to the works of Massimiliano Papini and Marina Prusac.
The bust of the “Console”
The finely worked head in white marble with small dark spots (similar to the marble of Chios) presents a weathered surface, especially in the upper portion. The short hairstyle with flat and separated locks does not appear to have been altered, while the face shows more extensive marks of reworking by filing and sanding, not only because of the insertion of the two inlays for the nose and the chin, but also in the elimination of some of the wrinkles of the forehead from the left superciliary ridge (plate 7, above). These elements by no means contribute significantly to the changing of the portrait’s physiognomy. The eyes are tiny and sunken, the cheeks are marked. The strong torsion of the neck emphasizes both the muscles and the folds of skin that indicate a mature man. The head is inserted into the bust - which is not pertinent - with small marble insertions. At the point of attachment, traces of the colophony, sealed with white stucco, are visible. The bust has two small insertions in the mantle, and another with a circular shape at the centre of the armour. All the insertions are stopped with bronze pins. In the bust the reworked parts are the upper part of the armour, at the level of the breast, strongly flattened by the subtraction of material, the left shoulder, and the folds of the drapery, partially cut and corrected with a rasp. The back of the bust shows uniform work with a stonemason's chisel, and the insertion of a reinforcing clamp and a square iron to anchor it to the masonry. Notwithstanding the extensive reworking, it is possible to establish that both head and bust are reused Roman pieces. There are indications that the stucco and the base have been reworked, as much as in the other niche, so it is likely that the busts were taken down and later remounted. This portrait bust, like the one opposite it, should be part of the original courtyard's arrangement.25 There are no material indications that suggest a substitution, in spite of the remaking of the corbels and the plaster in both niches.

The bust of Marcus Aurelius
The work shows Marcus Aurelius as a youth (plate 7, below). The head, undamaged, and of white Carrara marble with grey veining, is inserted into the bust at the base of the neck with a mixture of colophony. White stucco covers the juncture. The surface is extremely weathered, especially at the top of the head, where the curls have lost their definition and been reduced to an indistinct form, an indication of exposure to the elements. A careful examination reveals, however, that the marble is degraded on all its surfaces, which is to say that there are no parts that are less corroded in the undercut, as would normally be the case, a clear indication that the degradation is not the result of a natural phenomenon (or at least not exclusively), but of a treatment, most likely a cleaning with acid. Because of this extensive lack of cohesion of the surface, the signs of the work or reworking are scarcely distinguishable. We uncovered signs of the original work of the locks of hair, executed with a light chisel, on the lateral right part of the head. On the contrary, signs of reworking with a gradina are found on the left part of the hair and on the ruined and broken locks, an indication that this work was done after the breakage. Other fresh signs of reworking with a gradina are behind the chin, at the attachment of the neck. The eyes have an unusual detail: the irises have been executed differently one from the other. The left is dug out in the interior of the cornea, while the right is incised with a poorly executed irregular stroke.

To summarize: there are some traces although very corroded of the ancient work. The piece was ruined with acid. Regarding the quality of the marble used, it seems strange that a sculptor or a seventeenth-century counterfeiter would have chosen to make a copy, however compelling, in such an ordinary piece of marble. The bust is of the same kind of marble as the head. Most of the surface is reworked with large and small gradines, and with a rasp. Above all on the left shoulder, the tool removed enough material to leave visible the head of the pin. There are traces of reworking in the drapery, especially in the folds and holes. At the beginning of the shoulder-piece of the armour there are three drill holes in a row that at this point have no functional purpose, a clear sign of previous work. Also, two large holes below reveal that the original was reduced. Seen from behind the bust shows a homogenous work with a stonemason's chisel. A break at the height of the left shoulder is joined on the inside with a clamp, and a round iron attaches it to the wall. From the signs revealed it can be affirmed that it is a reused Roman bust. Although made of the same marble, the bust does not seem to be pertinent to the head, because, given the extensive reworking that reduced its dimensions, the original measurements do not correspond to the actual proportions between the two pieces.


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The large head
The large sized head also confirms the technical analysis already given of the two busts, being composed of two reused Roman pieces of the same type of marble, but not pertinent to the same object. In the upper part there are strongly visible marks of reworking left by the chisel on a surface already damaged and consumed. In the lower part, on the lip, there are remnants of a stucco in yellow mortar similar to those previously noted elsewhere. The head has been mentioned in the first inventory.

Concluding remarks
In conclusion, the restoration of the sculptures, especially the statue of the male nude no. 2, through the process of breaking them down has rendered much useful information about the technique of seventeenth-century restoration, both in terms of the materials used and the procedures of assembly that were followed. The analysis carried out have confirmed that the glue found is the original "mestura" composed of colophony and marble powder with the addition of wax, as specified in the treatises of the time. Another important fact was the discovery through exclusively material evidence that the actual position of the statues in the window space was not in accordance with the seventeenth-century display of Carlo Maderno. In the course of the work we have hypothesized that the totality of the damages among the statues placed in the window openings could have been caused by the moving of the statues. The material that was used afterwards to compensate for these fractures was yellow stucco with white superficial finishing, the same that we would find on the "togati", the female statue and also on the reliefs. We realized that it was not an isolated intervention, but a total restoration that went back to the time of the arrival and placement of the "togati" and of the new arrangement of this side of the courtyard. Apropos of an original placement of these nude statues different from the present one, we point out that from the stratigraphic analyses of the window frames where the statues are presently placed, the holes for the iron bars that were once inserted have been found there, a fact incompatible with the presence of the statues in this space. In the courtyard of the Palazzo Mattei, for example, a contemporary work by Maderno, the arch at the back is flanked by two sculptures, the windows are barred, and the statues are placed on pedestals. On the other hand, the statues were already described in the first inventory of 1640 as placed on pedestals: "e poi nel d.o cortile due statue ignude grandi una con panno, li altra senza, restaurate, sopra due piedistalli di altezza di palmi 8,7", a position specified later in an inventory of 1769: "due statue al naturale in piedi di marmo, con piedistalli di muro, che le reggono", and still visible at the time of the map of the ground floor made by Léartouilly. This arrangement must date from after 1870 at the time of Filippo Massimo Lancellotti, when, with the entrance door to the palace was shut as a sign of dissent against the new monarchy. The courtyard acquired a strictly private character, such that the bars on the windows could be taken away and the windows used as niches in the new personal display.

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26 This affirmation does not contradict, but indeed supports the communication of Prince Pietro Lancellotti: the “togati” brought to the Palazzo of Via dei Coronari together with other sculptures and possessions of Filippo Massimo Lancellotti, on that occasion underwent their first restoration which also involved the rest of the courtyard, the so-called yellow stucco phase. Subsequently removed, they were only returned after 1970, and the last, sporadic maintenance interventions, as revealed by the stratigraphic analysis of the cement and resin stucco, date from that time.
28 ASR, 30 Notai Capitolini, uff. 6 gennaio 1769, f.253, by courtesy di Agneta Freccero.
29 Letarouilly 1849-1853
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