[title] The Bronze Athlete from Ephesos

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[A-Head]

Abstract

[abstract]

In the second year of Austrian excavation in Ephesos (1896), the fragments of the “Athlete of Ephesos” were found in the ruins of the Harbor Baths. Vast parts of the marble architecture of the *palaestra* had been destroyed by earthquake and fire, but 234 statue fragments of various sizes, buried beneath the burnt roofing, were preserved. Most unusually, the base on which the statue was mounted was also preserved.

Due to an agreement between the Ottoman Sultan and the Austrian emperor, the statue and base was taken to Vienna as a gift to the imperial collections. In Vienna, sculptor Wilhelm Sturm was commissioned with the restoration of the statue. Recognizing the similarity of the statuary type, Sturm based the arrangement and composition of the athlete on the Apoxyomenos in the Uffizi in Florence. The Athlete of Ephesos was put on display immediately, in the first show of finds from Ephesos in Vienna in 1901. Since 1978, it has been part of the Ephesos Museum in the former Austrian Imperial Palace in Vienna.

Since the first publication of the statue in 1906, dating and art historical classification of the athlete have been disputed. While it is widely accepted that the cast itself is Roman, some authors cite Greek models from late Classical/early Hellenistic period, from the third and second century BC, while others argue for a Roman work of eclecticism.

Sturm realized the reconstruction of the statue in 1897–98. He built an internal armature scaffold of tinned iron, brass bars, and screws to mount the preserved fragments. These original parts underwent several mechanical and chemical treatments, as was common at that time. Sturm used a magnesium-chloride mortar as a filler and stabilizer. Even in the first exhibition, this hygroscopic material caused problems of efflorescence due to temperature and humidity fluctuations.

In the ensuing eight decades, sculptors undertook two major interventions. In 1951, the position of the right arm was corrected; and in 1977 a synthetic resin was added as a new filling material.

To dispel lingering doubts concerning the stability and strength of the interior scaffold or the possibility of active corrosion on the original bronze fragments, the Kunsthistorisches Museum together with the Getty Museum undertook scientific investigations to characterize and evaluate the mortar chemically and structurally. A solid construction of aluminum square tubes with custom-fit interior design was developed for transport.

[main text]

[A-head]1. Archaeological Background and History of the Bronze’s Classification

Among the few preserved bronze statues from antiquity, the Athlete from Ephesos is an outstanding case in several respects (**fig. 1.1**): (1) discovered in the late nineteenth century (1896), it comes from a clear context within its ancient surrounding; (2) to this day it ranks among the most complex conservation projects ever undertaken, requiring the reassembly of more than 200 fragments; (3) with the discovery of a “twin” statue in the sea near the coast of Croatia exactly 100 years later, it has recently become part of an intriguing case study and an issue for archaeology and art history.

Otto Benndorf (1838–1907), professor for Classical Archaeology at the University of Vienna, began the Austrian excavations in Ephesos in 1895 with support from the Austrian Emperor Franz Joseph. The focus in the early years was on major public buildings such as the Grand Theater and the so-called Harbor Baths, a spacious bath-gymnasium complex from the late first century AD.[[1]](#endnote-1) In 1896 the Austrian mission unearthed the *palaestra* of these baths, discovering a splendid marble hall with several sculptures and elements of architectural decoration.[[2]](#endnote-2) The southwest corner of the *palaestra* directly in front of this marble hall, although difficult to excavate due to the debris from the collapsed hall, turned out to be an important spot. It was the only section of the *palaestra* that remained untouched after an earthquake, which is estimated to have taken place in the third century AD. In contrast, the main area of the *palaestra* was probably first looted and then, presumably in the fifth century AD, incorporated into the late antique town, as the surprisingly well-preserved wealthy houses unearthed recently demonstrate.[[3]](#endnote-3)

Neither Benndorf nor English archaeologist John Turtle Wood excavated in this corner in the nineteenth century because the remnants of the roof and the building structures obstructed the ongoing work.[[4]](#endnote-4) Benndorf and his crew finally exposed the area in the early twentieth century and found a solid stone pedestal with bases and lower parts of pilasters, being part of a (mainly lost) aedicula (**fig. 1.2**).

In front of this aedicula,234 fragments of a life-size bronze sculpture were brought to light; it was dubbed the Athlete or the “Schaber” of Ephesos.[[5]](#endnote-5) Evidently the statue had been thrown off its base and fell forward, as the feet were found nearest to the pedestal and the head was farthest away.[[6]](#endnote-6) The wooden roof materials and the brick tiles of the hall covered the bronze fragments; marble blocks collapsed in such a way that they formed a kind of hollow, preserving the unbroken head attached to the upper part of the back (**fig. 1.3**).[[7]](#endnote-7)

Due to an *irade* (edict) of Sultan Abdul Hamid II, the Austrian ambassador, Freiherr von Calice, was allowed to choose some of the excavated finds, which were sent to Vienna as a gift from the Sultan to Emperor Franz Joseph.[[8]](#endnote-8) The Austrian Lloyd shipping company transported the sculptures, architectural elements, and small finds to Vienna in seven transports between 1896 and 1906; the fragments of the bronze athlete came to Vienna in the 1897 transport.[[9]](#endnote-9) (From 1907 onward, a new law concerning the legal framework of preservation of antiquities promoted by Osman Hamdi Bey, founder of the Istanbul Archaeological Museum, halted the export of archaeological heritage.) Today, most of the finds from Ephesos brought to Vienna are on display in the Ephesos Museum, which was opened 1978 in the former Habsburg imperial palace in Vienna.[[10]](#endnote-10) We will discuss the reconstruction of the heavily damaged statue is greater detail below.

After its restoration, the statue was immediately put on display, in the first exhibition of finds from Ephesos in the “Theseus Temple” in Vienna (**fig. 1.4**).[[11]](#endnote-11) This “temple,” a reduced copy of the “Theseion” (Hephaistieion) in Athens, was built by Pietro di Nobile in Vienna in 1819–23 to house the famous sculpture *Theseus Fighting the Minotaur* by Antonio Canova. After this sculpture was moved to the main staircase of the Kunsthistorisches Museum in the 1880s, the Theseus Temple was ready to house the Ephesos exhibition, which was enthusiastically received.

The exhibition of the Athlete represented a triumph of restoration, carried out by sculptor Wilhelm Sturm. The technique of the restoration and Sturm’s groundbreaking approach to solving the complex three-dimensional puzzle posed by 234 bronze fragments gained international attention. For example, Sturm was invited to Greece in 1901 to consult on the restoration of the Antikythera sculptures,[[12]](#endnote-12) though in the end he declined to take on the project.

Before the Ephesian sculpture could be reconstructed, one of the major tasks was to understand the composition of the statue and to determine the position of each fragment. Benndorf provided crucial knowledge, recognizing in the well-preserved head and its position the well-known statuary type of the marble athlete in the Uffizi of Florence.[[13]](#endnote-13) This statue stands on display today in the Galleria, with modern arms added, holding a jug. A plaster cast of this sculpture was commissioned and it served Sturm as a model for reconstructing the Ephesian Athlete.[[14]](#endnote-14) Due to the size and deformation of the fragments as well as losses, it was not possible to resolve every aspect of position of the arms and legs or the upper body. But remarkably only about ten fragments could not be allocated to a precise position.

Both the Ephesian and the Florentine statues were understood early on to represent athletes; this was clear because the short hair, slicked to the forehead, was apparently wet from sweat. Understanding the statuary type (or an assumed Greek original) as a masterpiece of the (late) Classical period, scholars connected it to the *Apoxyomenoi* (scrapers) mentioned in ancient literature as works of Polycleitus and his successors (see below). The concentrated gaze down toward the hands seemed to favor this interpretation. Hence the Ephesian Athlete was reconstructed as cleaning his left arm—more precisely, the back of his left hand—with a *stlengis*, or scraper.[[15]](#endnote-15)

At around the same time, in 1896, a smaller-than-life-size sculpture was found in Frascati, Italy, and soon made its way to the Museum of Fine Arts in Boston.[[16]](#endnote-16) The statue follows the same type as the athletes from Ephesos and Florence. The importance of this find was the preserved hands of the sculpture. It became clear that the athlete is not scraping the back of his hand but rather cleaning the *stlengis*, using the thumb of his left hand.[[17]](#endnote-17) Benndorf mentioned this statue already in his publication of the Ephesian Athlete in 1906.[[18]](#endnote-18) Obviously, however, it was too late to influence the restoration of the bronze statue from Ephesos: the right arm has already been mounted at an improper angle to the body. Half a century later, a major correction was made to the position of the right arm (see below). This correction also brought the fragments of the right shoulder and the upper right arm into considerably better coordination. Furthermore, the position of the arms now corresponds much better with the turn of the head.[[19]](#endnote-19)

As to the find situation of the Ephesian Athlete, this statue was part of the sculptural program of the *palaestra* of the Harbor Baths.[[20]](#endnote-20) Statues of athletes appear to have been a common sight in such contexts; for example, a scraping athlete statue is seen framed by columns and gables of *palaestra*-architecture on a series of Campana reliefs, including one preserved in the Kunsthistorisches Museum in Vienna (**fig. 1.5**).[[21]](#endnote-21) The stone socle and fragments of the pilasters of the aedicule that framed the statue remained *in situ*, but the narrow marble base was taken to Vienna. This base has moldings on three sides and bears an inscription on the front, of which parts of six lines are still readable (**fig. 1.6**).[[22]](#endnote-22) It mentions a Tiberius Claudius Frugianus as *gymnasiarchos* and a Tiberius Claudius [Aristion?] as *grammateus*; these individuals are well known as donor and builder, respectively, in the late first century/beginning of second century AD. We owe the knowledge of these names and the readability of the few fragments to four other bases of the same type, also found in the *palaestra*, naming the same officials and their dedications of further sculptures, which have not survived.[[23]](#endnote-23)

Surprising —and initially misleading—is the surface of the base. There are no holes or even traces thereof for fixing a sculpture on top of it. It is flat but not entirely even. Noting this fact, R. Heberdey in 1919 expressed doubt that this base carried a bronze sculpture: it lacks the characteristic holes to fix the legs by means of lead poured through the feet.[[24]](#endnote-24) Frank Willer has recently shown, however, that over course of time different techniques were used to fix bronze sculptures onto a base.[[25]](#endnote-25) In the Roman Imperial age, a statue was more often fixed to a metal panel or base than to the stone base itself; so in the end, the sculpture was “freestanding” due to an enlarged platform.[[26]](#endnote-26)

In this case from Ephesos, we have the rare good fortune of having both the bronze sculpture and its corresponding base. The date of the base might even hint at the age of the statue itself, taking into consideration the relatively short lifetime of this particular corner of the Harbor Baths. Some time in the fourth century AD, the southern rooms adjacent to the *palaestra* were modified and reused in the new *atrium thermarum Constantiniarum.* It seems that by that time, the southwest corner of the *palaestra* was abandoned. Hence, the earthquakes that destroyed this part of the building might have been those of the later third century AD, recorded strikingly by the destruction of the famous Slope Houses of Ephesos.[[27]](#endnote-27) Considering this, we see a timespan of less than two hundred years for the “lifetime” of the base. Taking into consideration that the technique used to make the Athlete points to the first/second century AD, it is most likely that statue and base were purposely made for display in the *palaestra* of the Harbor Baths (**fig. 1.7**)—until they were both buried by debris and thus no longer available for reuse or reworking.[[28]](#endnote-28)

After first assuming or rather hoping they had unearthed a “Greek original,” archaeologists soon agreed that the Ephesian Athlete must be a Roman sculpture. But even today a vivid discussion continues as to whether the statue is a copy of a Greek original or a Roman creation. The statuary type of the Ephesian Athlete is preserved in several surviving statues/torsos[[29]](#endnote-29) and heads.[[30]](#endnote-30) Two small-scale bronze statuettes also follow this type[[31]](#endnote-31): one from the Louvre differs in that the head is raised and the athlete does not look down to his hands. Depictions of the type are also preserved on Campana reliefs,[[32]](#endnote-32) as well as on gems,[[33]](#endnote-33) and even on a statuary base from the Acropolis of Athens.[[34]](#endnote-34)

Despite early speculation that the Ephesian Athlete was one of the two original Greek scrapers by Daidalos from Sikyon mentioned by Pliny,[[35]](#endnote-35) it was soon clear that the statue had to be dated in the Roman era. Already by 1906, Benndorf had pronounced it an “excellent copy from early Roman times.”[[36]](#endnote-36) However, scholars differ widely in dating the original of the type, with estimates ranging from the fourth century BC to the end of the first century AD:

[table, 2 cols.]

*Greek original:*

Schneider 1901 Greek (Attic), mid fourth century BC

Hauser 1902 Daidalos of Sikyon

Sieveking 1926 mid-fourth century BC

Stewart 1978 around 300 BC

*Roman copy:*

Benndorf 1906 early Roman copy

Johnson 1927 Hellenistic (Daippos?)

Lippold 1950 350 BC

Linfert 1966 Daidalos, 370–360 BC

Arnold 1969 Daidalos, 370–365 BC

Fuchs [1969] 1993 340/330 BC (Daidalos?)

Lattimore 1972 early Hellenistic, Phanis

Pochmarski 1988 Lysippos 320 BC or classicizing/copy of a Roman (!) sculpture

Moser von Filseck 1990 classicizing, early Augustan

Pochmarski 1999 Flavian (copy of Roman sculpture)

Willer 1996 Roman copy

Saladino 2006 before 350 BC (Daidalos? Polycletos II?)

Mattusch 2015 *officina* of Lysippos/Roman copy?

Daehner 2015 later fourth-century BC, early Imperial copy

[end table]

Karin Moser von Filseck claims the Ephesian Athlete to be the link between Polykleitos and Lysippos,[[37]](#endnote-37) while Dorothea Arnold ascribes it to the second generation after Polykleitos (370–365 BC), naming—again—Daidalos from Sikyon as a possible artist.[[38]](#endnote-38) Werner Fuchs explains the type as part of the Argive-Sikyonian tradition influenced by Lysippos (340/30 BC). A. F. Stewart and Steven Lattimore think of a possible date of origin in the third century BC following Lysippos.[[39]](#endnote-39) Erwin Pochmarski, finally, proposes an Imperial original in Rome (eclectisistic?) from which a direct copy was taken.[[40]](#endnote-40)

The discovery of the “twin” of the Ephesian Athlete, the Apoxyomenos from Lošinj, Croatia,[[41]](#endnote-41) brought renewed attention to the Ephesian Athlete.[[42]](#endnote-42) For the first time, it is possible to compare two bronze statues of the same type found in completely different circumstances and regions of the Mediterranean. It also proves, finally, the correct reconstruction of the Ephesian Athlete. The technical aspects of both statues seem to be quite similar, which leads to the assumption that both statues are Roman Imperial, probably from the same decades. The mounting of the head, for example, is consistent in both sculptures with the characteristic V-shaped lower edge of the neck.

The overall impression differs, though: the Ephesian Athlete seems to be slightly more muscular. Of course, fixing 234 fragments causes as many joints, perhaps “inflating” the chest to a certain degree. However, this is not enough to explain these differences.

The opportunity of seeing the two statues next to each other in the exhibition *Power and Pathos* at the Getty Museum, Los Angeles, led the focus of investigation back to the ancient techniques of bronze casting and joining of separate sections, but it also invited new art-historical discussion. In the catalogue to the exhibition, this type of athlete is suggested as coming from the *officina* of Lysippos[[43]](#endnote-43) or—more loosely—to be understood as arising in the environment of Polykleitos, Daidalos, or Lysippos.[[44]](#endnote-44)

Tracing a possible Greek original must be reconsidered in light of the different proportions and details of the two statues. Is it by chance that so many bronze specimens of this very type are preserved? In addition to the statues from Ephesos and Lošinj, the head now in the Kimbell Art Museum[[45]](#endnote-45) and even the basanite torso from Castel Gandolfo might be taken into consideration, as the material probably is meant to resemble bronze. The issue of the main view axis—determining the “front side” of the statue—can also be revisited with new evidence. The Campana reliefs show the athlete from the side, making his movement clearly understandable. In contrast, the preserved rectangular base plate from the Croatian athlete suggests a frontal view of the statue.

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[A-head]

2. Restoration History and Stability Evaluation

[main text]

The reconstruction of the Roman bronze statue was realized in Vienna in 1897–98 by the sculptor Wilhelm Sturm. He constructed an internal armature of tinned iron, brass bars, and screws to mount the 234 preserved fragments. The original fragments underwent several mechanical and chemical treatments, as was common at that time. Sturm used magnesium chloride containing mortar as a filler medium and stabilizer. During the first exhibition, this hygroscopic material caused problems of efflorescence due to temperature and humidity fluctuations; the Athlete was then moved to a better protected indoor location.

In the following eight decades, sculptors undertook two larger interventions. In 1951 the position of the right arm was corrected, and in 1977 synthetic resin was added as a new filling material. It is important to study this restoration history and conserve the treatments as far as possible. To dispel all doubts concerning the stability and strength of the interior armature or the possibility of active corrosion on the original bronze fragments, the Kunsthistorisches Museum Vienna, together with the J. Paul Getty Museum,[[46]](#endnote-46) undertook scientific investigations to characterize and evaluate the mortar chemically and structurally (mortar samples, X-radiography, endoscopic studies). Black-and-white images from 1898— taken before the mortar was poured inside the reconstructed statue—were helpful in gaining information about the condition of the original fragments and evaluating changes in comparison with the current X-ray images. For the transport of the Athlete, a “cage” of aluminum tubes, square in section, with a custom-fit interior design was developed.

This paper will present the remarkable reassembling of the bronze statue known as the Athlete of Ephesus at the end of the nineteenth century as well as the interventions in the twentieth century. The study of the different restoration treatments has revealed an interesting and complex history. Because of the diversity of materials involved, scientific investigations were necessary to evaluate the stability of the statue as it is preserved today. The first series of analyses was started 15 years ago; recent research has focused on corrosion, the composition and quality of the filling mortar, and possible changes. In 2013, a collaborative project established between the Collection of Greek and Roman Antiquities of the Kunsthistorisches Museum Vienna and the J. Paul Getty Museum was launched to support this work as well as for the design and development of a novel transport cage.

Archival photographs exist (see fig. 1.2) that show us the condition of the head right after the discovery of the Athlete in 1896.[[47]](#endnote-47) We see hard incrustations of sand and soil especially in the hair and on the forehead. No heavy corrosion or weakness of the metal is visible. However, the entire statue was broken into fragments. The heavy marble block that fell on the legs and lower part of the back caused deformation and loss of several pieces.

The reassembly of the 234 bronze fragments was a great challenge for Sturm, who was then head of the restoration studio of the antiquities department.[[48]](#endnote-48) Working together with his son, Sturm followed the then-standard practice for the treatment of outdoor bronze objects. He did not solder the fragments together, as he would have done with sound material. Instead, he reassembled them mechanically. Using more than 1,800 small brass screws, he connected 300 brass straps to the reverse side of the 234 fragments.[[49]](#endnote-49) In this way he managed to slot together the edges of the bronze as tightly as possible, with the reference statue from Florence in mind (see above).[[50]](#endnote-50) He completed the statue by mounting brass clasps to connect the two fragment assemblies to a tin-plated iron armature, giving them a rigid structure. The cleaned fragments weighed 85 kilograms (187 lbs.) (**fig. 1.8**). In order to fill the losses and to stabilize this very fragile framework, he filled the interior up to the cranium with a mortar mixture “of his own invention.”[[51]](#endnote-51) This was based upon magnesium chloride, also known as Sorel cement. According to Sturm’s son and assistant, there were several advantages to using this material:[[52]](#endnote-52) it was (1) lightweight; (2) believed to be free of hygroscopic properties; (3) absolutely stable; and (4) easy to model and to pigment to resemble bronze. Sturm remodeled the three missing fingers of the left hand, recasting them in bronze; only the thumb and ring finger are original (**fig.** **1.9**).

As we know today, this mortar (containing magnesium salts) is extremely sensitive to moisture.[[53]](#endnote-53) In the nineteenth century, it was only used indoors, as a very durable and long-lasting material for floors. Crucial in Sturm´s decision to use this particular mortar were probably its limited weight, its superb adhesion and binding power, and its rapid setting time of 30–45 minutes. Also, it is easy to grind and highly polishable. Presumably, he was aware of the basic principles set forth at the first international congress of art history held in Vienna 1873.[[54]](#endnote-54) A full section was dedicated to restoration issues, proclaiming: “We demand conservation, not restoration!”

Given Sturm’s interventions, is there is any chance we can find residues of the original surface? His cleaning was achieved by reduction: Sturm used diluted hydrochloric acid, neutralized in 1% potash solution and stabilized in repeatedly changing baths of distilled water. To remove harder crusts, he annealed the pieces “softly” in an iron pan filled with charcoal.[[55]](#endnote-55) In this context, “softly” probably means tempering the bronze fragments. The aim was to relax the inner structure of the metal and deliberately to soften the metal, making it easier to reshape the deformed fragments. Since there is evidence in the records that the surface color changed after this treatment,[[56]](#endnote-56) we must assume that there is little if any original surface left. We know for sure that Sturm mechanically removed the residues on the head and the hair with hammer and punches. The bronze surface was painted over with vinegar and later, to stop the oxidation, brushed with beeswax (wiping with neat’s-foot oil or olive oil was also very common [[57]](#endnote-57)) (**fig. 1.10**).

Shortly after the first exhibition of the freshly restored Athlete in the Theseus temple in 1901, the person in charge complained about efflorescence appearing on the bronze surface.[[58]](#endnote-58) Due to the fluctuating temperature and humidity from the outside, combined with the presence of a damp wine cellar below, the bronze had started to corrode. Ten years after the first exhibition, after repeated complaints and an expert opinion from Sturm Junior,[[59]](#endnote-59) the statue was removed, probably cleaned, and newly waxed or oiled.

Two further restorations or interventions are documented. First, in 1951, Karl Nieschlag,[[60]](#endnote-60) an academic sculptor and stage designer who held an Austrian state award for music, was commissioned to follow Fritz Eichler’s proposal to change the position of the right arm (see above).[[61]](#endnote-61) He removed the mortar of the upper arm, shortened the main iron rod by sawing off 1 centimeter (0.4 inches), and cut three brass straps.[[62]](#endnote-62) Using a short piece of iron, he welded the armature together again. Nieschlag completed the restoration with a new, pigmented mortar addition; we can see additional winding wire for fixing this mortar (**fig. 1.11**). He also filled cracks that had developed during transport or earlier, and he finished the surface treatment with a new wax coating. Nevertheless, he could not avoid producing new cracks. Second, in 1976, Alois Heidl,[[63]](#endnote-63) an academic sculptor and student of Fritz Wotruba,[[64]](#endnote-64) executed the most recent restoration of the Athlete. He removed parts of the mortar on the right calf including bronze fragments and gave the surface a new shape. Heidl worked large parts of the surface, leaving Nieschlag’s supplement almost untouched. He covered the bigger areas of the old mortar filling, like the upper back, the stomach, and the thighs, by modeling a pigmented synthetic resin.

When considering the transport of the Athlete from Vienna to California for the exhibition *Power and Pathos*,[[65]](#endnote-65) concerns arose about stability and strength of the internal framework and the mortar fill. Had the hygroscopic nature of the Sorel cement caused active corrosion on the inside of the ancient bronze as well as on the iron rod? Was the cement itself porous and inhomogeneous and was volume expansion a dangerous issue? In collaboration with the Getty Museum’s Department of Antiquities Conservation, samples of the Sorel cement were analyzed,[[66]](#endnote-66) confirming that the Vienna statue, despite its well-known instabilities, does not show evidence of current or past corrosion problems in the accessible areas.[[67]](#endnote-67) The mortar mixture is loaded with inert sand, and this highly porous mixture gives enough space for potential volume expansion. Inspection with a video borescope through one of the Athlete’s eyes showed no active corrosion on the inner surface of the neck.

Since 1900 several investigations have been executed:

[bulleted list]

Bronze:

* 1900[[68]](#endnote-68): Fusing analysis: 89% Cu, 6% Sn, 4.8% Pb
* 2002[[69]](#endnote-69): µ-RFA: polished surface: 84–88% Cu, 7–9% Sn, 4.5–7.7% Pb;  
  corroded surface: 45–60% Cu, 7–14% Sn, 25–39% Pb

Mortar:

* 2001[[70]](#endnote-70): Cement Testing Laboratory
* 2002, 2012, 2014: SEM
* 2012: X-ray spectrometry
* 2012: FTIR spectrometry
* 2012: Polarized light microscopy
* 2013: Raman spectroscopy

Structure:

* 2001, 2012, 2013: Endoscopy
* 2002, 2013: Radiography

Surface:

* 2013: IR spectroscopy
* 2013[[71]](#endnote-71): Gas chromatography for organic coatings

[end bulleted list]

To complement the X-radiography studies of the BAM[[72]](#endnote-72) performed in Berlin 2001 (**fig. 1.12**), the Austrian Technical Inspection Authority (TÜV) provided their portable X-ray apparatus. Radiography images, produced by selenium-isotope continuous radiation, yielded additional information about the porosity and the structural distribution of the Sorel cement. For this investigation, the radiation had to reach as far as 40 meters (44 yards), a difficult task to organize in the Neue Burg, the spacious building where the Athlete is on display in the Ephesos Museum.

Under X-radiation, the chest of the Athlete showed very high density with almost no detectable penetration, even after doubling the radiation’s intensity and prolonging the exposure time fourfold. A possible reason could be the high concentration of barite[[73]](#endnote-73) in the fill, but a conclusive explanation is still lacking.

New information enabled us to detect the traces of interventions (**fig. 1.13**), the distribution of the mortar inside the sculpture, and the thickness and position of the individual bronze fragments. Equally important for the final interpretation were the black-and-white images taken in 1898, showing the reconstructed Athlete without the mortar fill. Using these images for comparison with the X-ray images taken in 2013, we were able to gain essential new information regarding construction changes, fragment position, and visible facture lines (**figs. 1.14–15**).

In 2015, a three-dimensional model of the Athlete was generated to build the custom cage for transport.[[74]](#endnote-74) Our colleagues at the Getty Museum developed the aluminum structure (**fig. 1.16**), which allowed the entire weight of the cage and the statue to be supported by the fillet of the base. An accurately fitting, two-piece counterpart made of epoxy resin was mechanically connected with the aluminum construction and the pallet. To keep the statue stable inside the cage, aluminum crossbeams were screwed onto the scaffolding. Customized designs were cut out of an inert foam and applied to the beams in order to supply soft but rigid and sufficient support to the Athlete.[[75]](#endnote-75) For vibration control, a pre-calculated amount of special shock-absorbing material was placed between the inner and the outer crate, absorbing fully 93% of shock, as confirmed by vibration measurements.

[A-head]Acknowledgments

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1. Benndorf 1906, 181–84; Wohlers-Scharf 1995, 79–83. [↑](#endnote-ref-1)
2. Benndorf 1898, 64–69. [↑](#endnote-ref-2)
3. Pülz 2010, 552–54. [↑](#endnote-ref-3)
4. Wood 1877, 34–35. [↑](#endnote-ref-4)
5. Benndorf 1898, 66–67; Benndorf 1906. [↑](#endnote-ref-5)
6. Heberdey 1919, 250: “Der rechte Fuß lag etwa zwei bis drei Schritte Nordost vom Ädikulasockel entfernt, an ihn schlossen sich in gleicher Richtung und ungestörter Folge die übrigen Bruchstücke bis zu dem durch glückliche Verkeilung einiger großer Gebälkstücke und eine bei dem Fall entstandene Mulde im Fußboden vor stärkerem Schaden bewahrten Kopfe.” [↑](#endnote-ref-6)
7. Benndorf 1898, 65–66; Benndorf 1906, 184. [↑](#endnote-ref-7)
8. Wohlers-Scharf 1995, 87–88. 98–99; Oberleitner et al. 1978, 36; in return the Sultan received gifts of Lippizan horses and other precious items. [↑](#endnote-ref-8)
9. The annual report of the Collection of Greek and Roman Antiquities, former k.k. Münz- und Antikenkabinett, from 1897 contains a short report: “Die bedeutendste Schenkung an die Antikensammlung sind die von S.M. dem Sultan gewidmeten Ausgrabungen von Ephesus, welche die österreichische Expedition dort ergraben und nach Wien gebracht hat, darunter Teile einer überlebensgroßen bronzenen Athletenstatue, ein bronzenes Thymiaterion, Bruchstücke einer Bronzegruppe des Hercules mit den Kentauren, Säulenschäfte aus kostbarem Marmor, einige Skulpturen und eine große Menge von Fragmenten. Dieser Schenkung solle hier aus dem Grund gedacht werden, weil sie zu Beginn des Jahres 1897 nach Wien gelangt und die allerhöchste Annahme in diesem Jahr erfolgt ist. Die Zusammensetzung der Bruchstücke ist aber unterbrochen worden teils durch Abwarten, ob die im Herbst 1897 fortgesetzten Ausgrabungen noch fehlende Fragmente bringen möchten, teils durch das verzögerte Eintreffen eines Gipsabgusses der Florentiner Athletenstatue, die als Modell für die Zusammensetzung der Bruchstücke unseres bronzenen Athleten dienen soll. Die Marmorskulpturen scheinen der römischen Kaiserzeit anzugehören, während die Epoche der Entstehung der Bronzestatue noch einen Gegenstand der Erörterung in den Fachkreisen bildet. ” (ZL AS 9, Jan. 28, 1898). [↑](#endnote-ref-9)
10. Oberleitner et al. 1978, 7–10. [↑](#endnote-ref-10)
11. Schneider 1901, 1–3. [↑](#endnote-ref-11)
12. Svoronos and Barth 1908, 15. [↑](#endnote-ref-12)
13. Mansuelli 1958, 59–60, cat. 36. [↑](#endnote-ref-13)
14. The cast is still kept in the collection of the Institute of Classical Archaeology, Vienna University; Pavese 1999 compares the different dimensions and proportions of the Viennese and Florentine statues, the result— extensive analogy—comes as no surprise knowing that Sturm used this copy. [↑](#endnote-ref-14)
15. For the first years of exhibition in the Theseus temple, a Roman *strigilis*, in the collection of the Kunsthistorisches Museum, was placed in the Athlete’s right hand to clarify his movement for visitors; see fig. 1.4. [↑](#endnote-ref-15)
16. Hartwig 1901; Benndorf 1906, 195–97; Comstock and Vermeule 1976, 100–101, cat. 155. [↑](#endnote-ref-16)
17. The Viennese reconstruction was already questioned by Hauser 1902. [↑](#endnote-ref-17)
18. Benndorf 1906, 195–97. [↑](#endnote-ref-18)
19. Eichler 1953. [↑](#endnote-ref-19)
20. Benndorf 1906, 185, fig. 131. [↑](#endnote-ref-20)
21. Kunsthistorisches Museum, Vienna, Antikensammlung, inv. V 1895, see Hartwig 1903; for the type, see Perry 1997, 42–45 with further examples. [↑](#endnote-ref-21)
22. Kunsthistorisches Museum, Antikensammlung, inv. III 1087; Engelmann et al. 1980, 89, no. 1128. [↑](#endnote-ref-22)
23. Engelmann et al. 1980, 89–90, no. 1129a–c; Benndorf 1898, 65–66. [↑](#endnote-ref-23)
24. Heberdey 1919. [↑](#endnote-ref-24)
25. Willer 1996. [↑](#endnote-ref-25)
26. Willer 1996, 362–70. [↑](#endnote-ref-26)
27. Ladstätter 2002, 23–26. [↑](#endnote-ref-27)
28. George Niemann, architect and draftsman of the Austrian mission, reconstructed the *aedicula* from the few remaining parts. [↑](#endnote-ref-28)
29. Statues of the type Florence/Ephesos/Mali Lošinj (see also Daehner 2015, esp. 281):

    1. Ephesos (Vienna, Kunsthistorisches Museum/Ephesos Museum, inv. VI 3168, bronze)

    2. Florence (Florence, Galleria degli Uffizi, inv. 1914/100, marble; existing already under Cosimo I, in the Gallery since 1740; Mansuelli 1958, 59–60, cat. 36)

    3. Lošinj (Museum of Apoxyomenos, Mali Lošinj, marble; Michelucci 2006)

    4. Frascati (Boston, Museum of Fine Arts, inv. 00.304, marble; small scale; Comstock and Vermeule 1976, 100–101, no. 155)

    5. Rome, from Tivoli (Musei Vaticani, no.. 105, Braccio Nuovo, marble torso; Neudecker 1988, 236, no. 68.3 pl. 15.3)

    6. Rome (Musei Vaticani, Mus. Chiaramonti Braccio Nuovo 99, marble torso with head type Torino/Braccio Nuovo; Arnold 1969, 270, no. K7; Neudecker 1988, 236, no. 68.4, pl. 15.2)

    7. Castel Gandolfo (Villa Barberini/Castel Gandolfo, no. 36405, basanite; Liverani 1989, 59, no. 22)

    8. Louvre (Musee du Louvre, statue Borghese, marble; Benndorf 1906, 200–201, fig. 153; Arnold 1969, 270, no. K8) [↑](#endnote-ref-29)
30. Heads of the type Florence/Ephesos/Mali Lošinj:

    1. Fort Worth, Kimbell Art Museum, AP 2000.03, bronze (since 2000, before Senator Bernardo Nani [1712–1761], Venice. Lucien Guiraud [Hotel Drouot, Paris] sale June 14–15, 1956, no. 106 (as 16th century); Hans Calmann [1899–1982], London and Somerset; auction, Sotheby’s, New York, June 14, 2000, no. 60; Gschwantler 1995, 293)

    2. St. Petersburg, State Hermitage Museum, from Rome, marble (Benndorf 1906, 199, fig. 150-151; Arnold 1969, 269–207, no. K2)

    3. Rome, Museo Torlonia, inv. 86, marble (Götze 1938, 226; Arnold 1969, 270, no. K4; Gasparri 1980, 166, no. 86)

    4. Rome, Musei Vaticani, marble (Amelung [1903] 1956, 114, no. 99)

    5. New York, Metropolitan Museum of Art, marble (head of statue; Richter 1954, 110)

    6. Bruxelles, Musée Royaux d’Art e d’Histoire, marble (Cumont 1913, 10, fig. 5 = Hartwig 1901, 158, fig. 185)

    The head in Dresden, no. Hm 132, is no longer thought to follow the same type as Dörig 1965, 40, proposed; see now Vorster 2011. [↑](#endnote-ref-30)
31. Small-scale bronze statuettes:

    1. Trier (Furtwängler 1898, 9–11, fig. 5; Benndorf 1906, 201, fig. 154)

    2. Louvre (MND 1895, Charbonneaux 1941, 42, fig. 1; Arnold 1969, 166–67, plate 21b) [↑](#endnote-ref-31)
32. Hartwig 1903; Perry 1997, 42–45. [↑](#endnote-ref-32)
33. Furtwängler 1893, 470–71, fig. 78; Benndorf 1906, 198–99, fig. 148–49. [↑](#endnote-ref-33)
34. Walter 1923, 195–98, no. 401–401a. [↑](#endnote-ref-34)
35. Hauser 1902. [↑](#endnote-ref-35)
36. Benndorf 1906, 204. [↑](#endnote-ref-36)
37. Moser von Filseck 1988, 111–20. [↑](#endnote-ref-37)
38. Arnold 1969, 155–56, 269, no. 1; also Linfert 1990 names the Ephesian Athlete in the group of Polykleitos’s school. [↑](#endnote-ref-38)
39. Lattimore 1972; Stewart 1978. [↑](#endnote-ref-39)
40. Pochmarski 1988; Pochmarski 1999; as proof he mentions unevenness of the surface of the Ephesian Athlete going back to *tasselli,* repair patches of the statue copied in Rome; due to the state of the fragments when found and the massive physical treatment they underwent while undergoing restoration, this observation is unconvincing. [↑](#endnote-ref-40)
41. Sanader 1999; Michelucci 2006; see the contribution of Karniš Vidovič and Mille (ch. 43) in this volume.. [↑](#endnote-ref-41)
42. As the athletes are not strictly speaking scraping themselves but rather are cleaning their scrapers, they are not *Apoxyomenoi* but strigilis-cleaners; see Weber 1999. [↑](#endnote-ref-42)
43. Mattusch 2015. [↑](#endnote-ref-43)
44. Daehner 2015. [↑](#endnote-ref-44)
45. Potts 2015. [↑](#endnote-ref-45)
46. In 1989/90 a joint project (*The Conservation of the Apoxyomenos from Ephesos*) between the J. Paul Getty Museum (M. True, J. Podany) and the Collection of Greek and Roman Antiquities in Vienna was already planned, including the entire disassembly of the statue; this project was not realized because of the risks of transportation and disassembly (see Archive of the Collection of Greek and Roman Antiquities, Kunsthistorisches Museum Vienna, ZL AS 27 ex 1989; 9 ex 1990). [↑](#endnote-ref-46)
47. Benndorf 1898, 66–67. [↑](#endnote-ref-47)
48. Bauer 1885; Koller 2009. [↑](#endnote-ref-48)
49. Archive of the Collection of Greek and Roman Antiquities, ZL AS 16 ex Jan. 28, 1898 (*Jahresbericht* 1898). [↑](#endnote-ref-49)
50. Mansuelli 1958, 9–10, no. 36, inv. 100. [↑](#endnote-ref-50)
51. Benndorf 1906, 187–88. [↑](#endnote-ref-51)
52. Wilhelm Sturm Junior’s explanation for choosing this technique is mentioned in a letter, written by Robert von Schneider, director of the collection of Greek and Roman Antiquities, to the Austrian Emperor, Nov. 30, 1901; see archive ZL AS 26/1–4. [↑](#endnote-ref-52)
53. Weber et al. 2012, 98–103. [↑](#endnote-ref-53)
54. *Mitteilungen des Österreichischen Museums für Kunst und Industrie 8* (Vienna, 1873), 481––83. [↑](#endnote-ref-54)
55. Benndorf 1906, 186. [↑](#endnote-ref-55)
56. Benndorf 1906, 187. [↑](#endnote-ref-56)
57. Anonymous 1895. [↑](#endnote-ref-57)
58. Collection archive, AS.ZL 28 from June 15, 1906. [↑](#endnote-ref-58)
59. Collection archive AS.ZL 21 from July 6, 1910. [↑](#endnote-ref-59)
60. Frank 2007. [↑](#endnote-ref-60)
61. Eichler 1953. [↑](#endnote-ref-61)
62. Collection archive AS ZL 9/1951. [↑](#endnote-ref-62)
63. Nierhaus 1993, 180–269. [↑](#endnote-ref-63)
64. Breicha 1977. [↑](#endnote-ref-64)
65. Daehner 2015. [↑](#endnote-ref-65)
66. Twilley 2013. [↑](#endnote-ref-66)
67. At the back of the Athlete, a small fragment screwed separately could be removed; here access to the mortar fill was possible. [↑](#endnote-ref-67)
68. Natterer 1900. [↑](#endnote-ref-68)
69. Unpublished research report: Manfred Schreiner, Katharina Dietrich. Akademie der bildenden Künste, Vienna, 2002. [↑](#endnote-ref-69)
70. Gschwantler 1995, 290; Unpublished research report on Perlmoser Zementwerke (W. Melchart), 1992. [↑](#endnote-ref-70)
71. Unpublished research report on the GC-MS analysis (Vaclav Pitthard), 2013. [↑](#endnote-ref-71)
72. Bundesanstalt für Materialforschung und –prüfung, Berlin; the X-ray was made in the context of the exhibition *Die griechische Klassik* in 2002 in Berlin and Bonn by the BAM (J. Goebbels in collaboration with F. Willer, Bonn, and V. Freiberger, Vienna) as part of a project to study the condition of the statue and to clear up some technical questions; Gschwantler 2002. [↑](#endnote-ref-72)
73. Barium sulfate as a filler medium is generally applied: verbal comm., Farkas Pinter, Scientist, Federal Monument office (BDA) Vienna; see also Twilley 2013. [↑](#endnote-ref-73)
74. The scan was provided by Christian Kurtze, Austrian Archeological Institute. [↑](#endnote-ref-74)
75. A video clip of staff assembling the cage around the statue is available at <http://www.khm.at/erfahren/forschung/forschungsprojekte/antikensammlung/der-schaber-von-ephesos/?back=%2Ferfahren%2Fforschung%2Fforschungsprojekte%2F&open=2157&cHash=b3133a4fdf0462f6e4c50ec678406735> [↑](#endnote-ref-75)