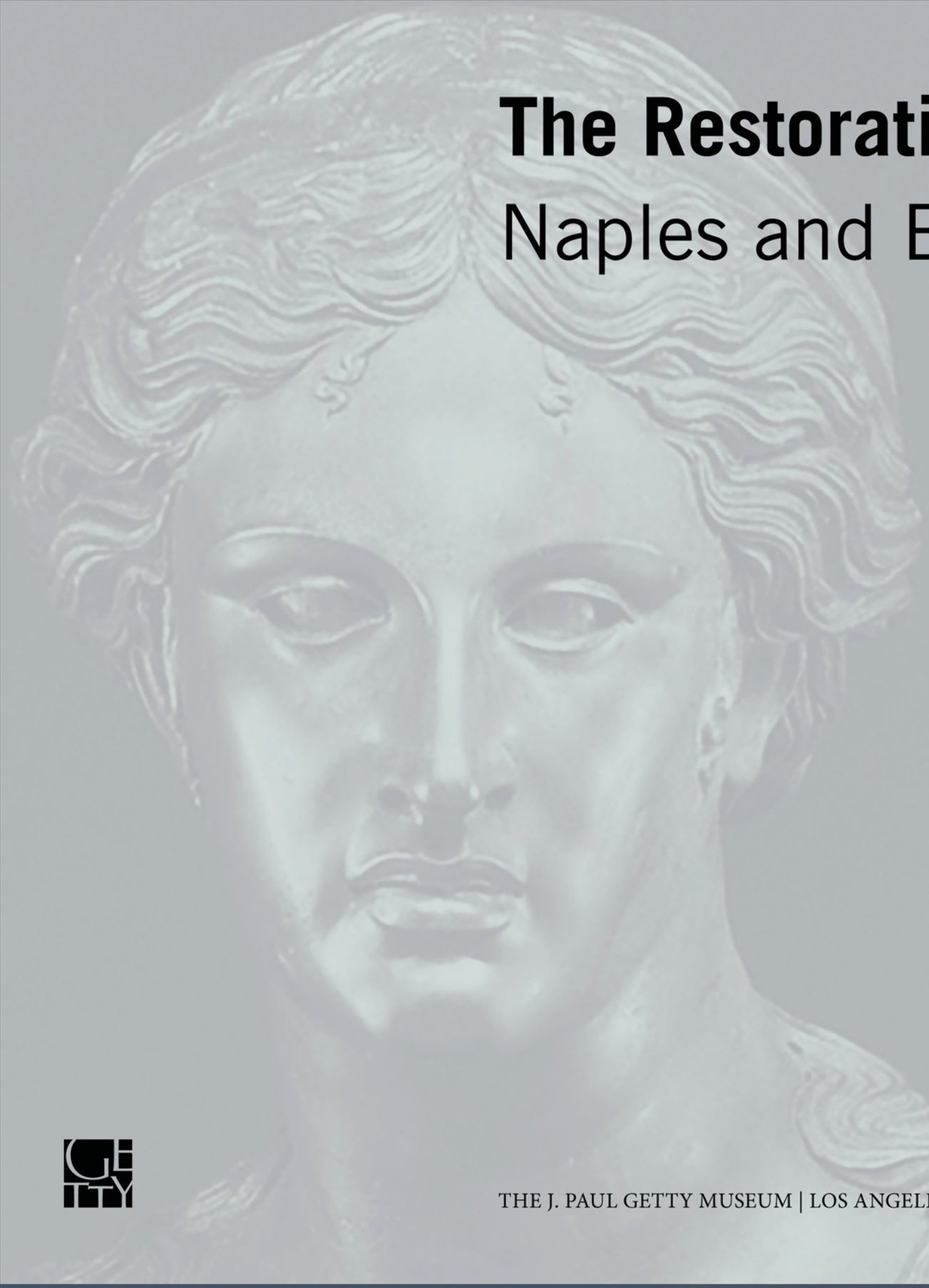

The Restoration of Ancient Bronzes

Naples and Beyond

Edited by Erik Risser and David Saunders

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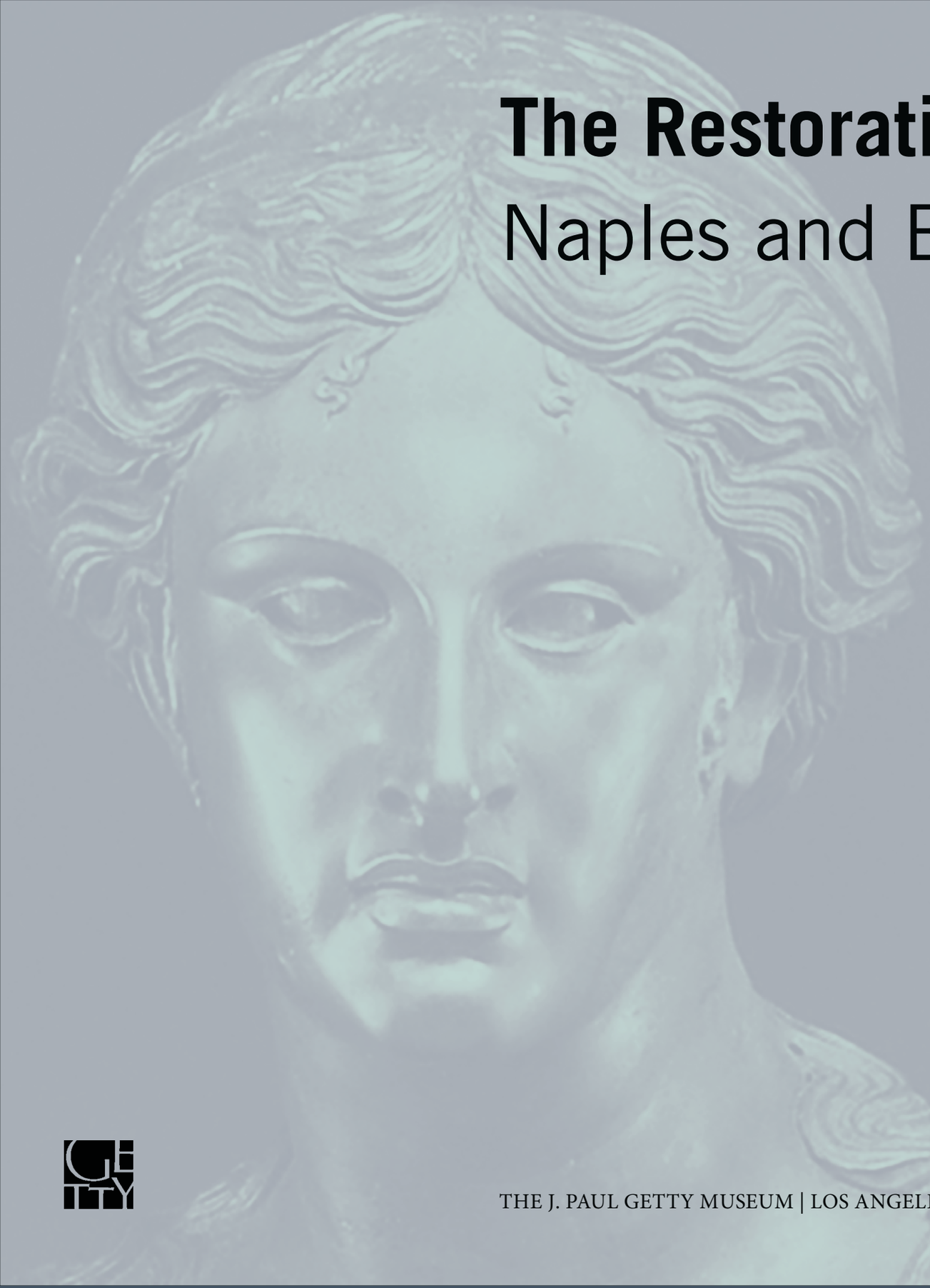

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THE J. PAUL GETTY MUSEUM | LOS ANGELES

Published by the J. Paul Getty Museum, Los Angeles

Getty Publications
1200 Getty Center Drive, Suite 500
Los Angeles, CA 90049–1682
www.getty.edu/publications

Beatrice Hohenegger, *Editor*
Catherine Lorenz, *Designer*
Elizabeth Kahn, *Production Coordinator*

ISBN 978-1-60606-154-1

Front image: Apollo Saettante, 100 B.C.–before A.D. 79. Naples, Museo Archeologico Nazionale (detail, figure 4.18)

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Acknowledgments

The origins of this volume lie in our work on the Apollo Saettante from Pompeii, and we owe profound thanks to our colleagues at the Soprintendenza per i Beni Archeologici di Napoli e Pompei and the J. Paul Getty Museum for supporting and nurturing the project since 2009: Teresa Elena Cinquantaquattro, Valeria Sampaolo, David Bomford, Timothy Potts, Karol Wight, Jerry Podany, and Claire Lyons. In particular, we are indebted to Luigia Melillo, without whose support and collaboration so much of our work would not have been possible. Our thinking about the production and restoration of ancient bronzes owes much to many conversations with Kenneth Lapatin, Jens Daehner, and Jeffrey Maish.

The one-day conference, at which the majority of these papers were presented, could not have happened without the organization of Lisa Guzzetta and Kelli O'Leary. From the outset, the speakers—including Henry Lie, whose presentation does not feature in this volume—were enthusiastic participants, and it has been a pleasure to work with all of them. Marina Belozerskaya was instrumental in helping to develop our ideas about this volume, and we are indebted to Rob Flynn and Kara Kirk at Getty Publications for supporting its development. Jane Bassett generously gave her time and expertise to serve as a peer reviewer, while as copy editor, Jane Bobko brought sharp-eyed scrutiny to each essay. Finally, we owe sincere thanks to our colleagues at Getty Publications and the Web Group who have guided us on diverse matters of design and content, and without whose creative vision, experience, and careful judgment this publication could not have been realized: Beatrice Hohenegger, Elizabeth Kahn, Catherine Lorenz, Jack Ludden, Pam Moffatt and Mark Stone.

Erik Risser and David Saunders
Los Angeles, 2013

1 | Introduction

Erik Risser and David Saunders

Following an agreement signed by the J. Paul Getty Museum and the Italian Ministry of Culture in 2007, a number of fruitful collaborative projects with Italian institutions have been undertaken. The most immediately visible have been the loan of objects, such as the Chimaera of Arezzo (Florence, Museo Archeologico Nazionale), for display in a special exhibition at the Getty Villa and the long-term loan of the Ephebe from the Via dell'Abbondanza (Naples, Museo Archeologico Nazionale).[1] Other projects have utilized the Getty Museum's resources and expertise in the field of antiquities conservation to the benefit of both parties. One of the first of these was the treatment of the bronze Apollo Saettante from Pompeii (Naples, Museo Archeologico Nazionale). Long off display, owing to a failed join at its right ankle, and dangerously burdened by the restored bronze drapery that hung from its arms, this statue came from Naples to the Getty Villa in March 2009 for study and conservation. Over the next eighteen months the Apollo underwent a full analysis in order to ascertain the technique of its ancient manufacture, any alterations due to its destruction and burial at Pompeii, and evidence of restorations after the discovery of its fragments in 1817 and 1818. The findings of this study guided the conservation project at the Getty Museum, which resulted in a new, secure repair to the right ankle, and the removal of the existing drapery ends and their replacement with lightweight modern materials modeled after early drawings of the statue. Following the cleaning of the statue's surface, the Apollo appears today as it was seen in the Real Museo Borbonico in Naples after its early-nineteenth-century restoration.

FIGURE 1.1. Apollo Saettante and Diana on display at the Getty Villa exhibition *Apollo from Pompeii: Investigating an Ancient Bronze*, 2011

On completion of the conservation project, the Apollo was the centerpiece in the exhibition, *Apollo from Pompeii: Investigating an Ancient Bronze* (March 2–September 12, 2011), which presented the story of the statue's discovery, its ancient manufacture, and its nineteenth-century restorations (fig. 1.1).[2] Through the generosity of our colleagues in Naples, the exhibition also featured the Apollo's sister piece, the bronze Diana (discovered in 1817), and it was possible to study this figure as we had the Apollo. In the course of examining the statues of the twin gods together, combining research into documentary sources with technical studies and scientific analyses, we found few publications that paid sustained attention to other ancient bronzes that had been

restored in the nineteenth century.[3] This absence was all the more striking when compared to the thorough and detailed studies of bronzes that were discovered at Herculaneum and Pompeii in the eighteenth century.[4] It was to address this gap that a one-day conference, "Restoring Ancient Bronzes in the Nineteenth Century" (May 6, 2011), was organized, bringing together scholars engaged in studying ancient bronzes.[5] The papers presented that day highlighted the special case of Naples, and form the basis of this publication.

Studying the History of Restorations

Extant large bronzes from the ancient Mediterranean are relatively scarce, and the history of restoring antiquities has thus far been written largely in reference to objects that survive in much greater numbers—most obviously, stone sculpture. Some trends can be identified.[6] For centuries it was typical to restore ancient statues so that they would be fit for display, even if this entailed the creation of pastiches, using parts of other figures or adding limbs, heads, and attributes afresh. In time, however, these techniques began to generate criticism, and by the early nineteenth century there was a gradual, though by no means consistent, tendency to limit, or even refrain from, restoring or changing the original integrity of ancient monuments.[7] Emblematic examples are the nonrestoration of the Parthenon marbles in 1816, and Raffaele Stern's and Giuseppe Valadier's work on the Arch of Titus (where integrations were left visible) between 1819 and 1821.[8] The development of the study of classical archaeology, together with the Romantic focus on "the fragment," helped to establish this purist approach to the material remains of the ancient world. In the twentieth century this modus operandi could extend even to the removal (and sometimes discarding) of historical restorations to ancient marble statues. In some cases, however, this was to their detriment, and in recent decades the pendulum has swung back in favor of retaining historical restorations, which are seen as an essential chapter of an ancient statue's biography. Using techniques that are reversible and that risk no further damage, the modern conservator's work is sensitive to the general appearance of the object, for example, by rendering the area of a join identifiable at a close distance, using materials that can be visually (if subtly) differentiated from the original, and providing documentary illustrations in didactic displays. These measures make any interventions clear but not distracting.

It is in this narrative that we seek to situate the restoration of ancient bronzes. Were similar issues at stake? Can the same trends be identified? Where were the centers of activity and expertise? To whom was the work entrusted—specialized bronzeworkers, or sculptors and artists? Did the scarcity of the medium occasion exceptional approaches? How did the material dictate the methods used? Debate over the degree to which antiquities should be restored, and how, has a substantial history, and archival sources reveal conflicting opinions regarding what was more

desirable—that an ancient artifact look complete so as to delight the eye, or that evidence of the restorer's intervention be clearly visible.

The Special Case of Naples

One field in which this historical debate has been closely investigated in recent years is the restoration of Greek painted pottery, and nineteenth-century Naples has been shown to be a particularly important center for such work.[9] Indeed, it was here that the restorer's art was memorably termed (by James Millingen) "a dangerous perfection."[10] Authenticity and integrity were concerns for the market as much as the museum, and Naples had become a nexus for the competing claims of archaeologists and aristocrats, dealers and dilettantes. From the middle of the eighteenth century, the unprecedented finds from the Vesuvian sites prompted innovation and experimentation in their study, display, restoration, and preservation. These themes are amply explored in Andrea Milanese's essay in this volume, which lays out the museological, archaeological, and intellectual frameworks within which any study of restoration practices in Naples must be viewed. As noted above, much work has been undertaken of late on early vase restorations. The same is true for wall paintings,[11] and these, too, highlight why Naples should stand as a special case in the history of the restoration of ancient artworks. Excavations at Herculaneum, Pompeii, and Stabiae brought to light an unparalleled array of wall paintings, and the frequency with which they were unearthed demanded new thinking to satisfy the diverse desires and needs for their display, storage, preservation, and publication. By necessity (but also through the involvement of those in power), Naples emerged as a leading center for the development of restoration methods and practices.

We can argue a similar case for bronze sculptures. Prior to the first excavations at Herculaneum, in 1738, surviving large ancient bronzes were relatively few. But with the unearthing of the over-life-size portraits from the theater and so-called Basilica, as well as the series of statues and busts from the Villa dei Papiri, Naples became the primary locus for large-scale bronzes, and accordingly for their restoration. As in the case of wall paintings, there was in the mid-eighteenth century little precedent for the pressing need to care for these finds and prepare them for display and publication. Carol Mattusch's essay addresses the ways in which these restored statues were presented, often with no hint that they were in anything but perfect condition. Indeed, repaired statues were shown to the Neapolitan prime minister Bernardo Tanucci *before* a new patina was applied, in order to demonstrate the extent of the labor that had been required.[12] By implication, this underscores the ultimate goal of the restoration process, for such heavy interventions would in the end not be visible.

Aspects of this work were critiqued by Johann Joachim Winckelmann and others, and study of archival sources, together with technical examinations of many of the statues, has made it

possible to understand what occasioned Winckelmann's observations. Recent scholarship, particularly that of Carol Mattusch and Henry Lie, and Götz Lahusen and Edilberto Formigli, provides us with a better understanding of the methods, materials, and even personnel employed at the Royal Foundry at Portici, and serves as an important framework for the articles presented in this volume. Like marble sculptures, paintings, and mosaics, the bronzes were initially the responsibility of the sculptor Giuseppe Canart. In contravention of a royal decree, they were stripped of their ancient patina,[13] and fragments that could not be restored were often melted down (in some cases to produce new bronzes to adorn the royal palace). Notably, the Reale Accademia Ercolanese di Archeologia, a committee of scholars who oversaw the research into and publication of finds from throughout the Vesuvian region, bemoaned not only the poor quality of Canart's materials but also the manner of his restorations. In 1760 responsibility for overseeing the work was entrusted to Camillo Paderni, and a number of the earlier restorations were redone. Objects were cleaned using abrasive tools and perhaps acids, and gaps were filled by pouring quantities of molten bronze from within and affixing the metal with pins. Where large parts, such as arms or drapery, were missing, the new pieces were modeled on the statue itself and then cast in situ. Likewise, nine of the bronze heads from the Villa dei Papiri were fitted with new busts (most of them with added drapery) and were then fixed to bases with iron strap mounts. As noted above, the addition of a new patina—made using a mix of plaster and filings obtained from cleaning the ancient surfaces of their corrosion deposits—was a fundamental part of the process, hiding the evidence of the restorer's interventions and rendering the statue presentable.

Our study of the Apollo and Diana from Pompeii indicates that many of the methods employed at Portici in the eighteenth century continued to be used into the nineteenth, but there are also a number of differences from one era to the next. Of special interest in the broader context of the history of restoration practices is a royal decree that sought to restrict the intervention of restorers. Promulgated in 1818, just months after the main fragments of the Apollo had been found, it acknowledged that restorations were an obstacle to understanding, and directed that finds should be left in the state in which they were discovered.[14] The decree took particular notice of the original patina of bronze statues, requiring that this be untreated, as it offered the only secure evidence for a bronze's antiquity. Such exacting regulations were themselves subject to renegotiation, and even in the early twentieth century—in the case of the Ephebe from the Via dell'Abbondanza, discussed here by Luigia Melillo—the ancient surface could still be roughly treated. The use of cement to provide internal support for this statue (and others), and also to serve as a surface on which to secure fragments, suggests that whereas in the eighteenth century bronzes were restored with the methods and materials of the foundry, by the 1920s such work was not the sole domain of bronzeworkers. Yet the treatment of the Ephebe does reveal a certain

sensitivity for the integrity of the ancient metal: a sateen fabric was placed as a barrier between the cement and the bronze.

Beyond Naples

The first half of this publication thus focuses on Naples, and provides a chronological overview of what was—on account of the special situation of the ancient Vesuvian towns—a uniquely concentrated center of activity for the restoration of ancient bronzes. Future studies will add to this picture, and promise to shed light on shifting trends and evolving attitudes. As Milanese's essay notes, however, we should be aware that varying perspectives on proper restoration methods could exist contemporaneously within the same institution, and the condition in which each object was found dictated the decisions regarding reconstruction and display.

The essays in the second half of this volume, which consider bronze statues restored elsewhere in Europe, principally in Florence (the Minerva of Arezzo, the Trebonianus Gallus), Paris (the Child with a Bulla, the Trebonianus Gallus again), and Berlin, underscore this point. Whereas the Neapolitan bronzes were intended for display in the Herculanense Museum (and later the Real Museo Borbonico), other bronzes investigated here were initially set up in (and thus restored for) private contexts. The Minerva of Arezzo, for example, was originally acquired by Cosimo I de' Medici, and the Trebonianus Gallus (New York, Metropolitan Museum of Art) was installed first in Count Nicholas Demidoff's villa near Florence, then in Count Auguste de Montferrand's home in Saint Petersburg.

The Trebonianus Gallus was later acquired by art dealers in Paris, in whose custody it was restored between 1896 and 1905. After an initial attempt had proved unsuccessful, they called in a specialist, Alfred André, who had just completed a restoration of another large bronze, the Antikythera Youth, in Athens.[15] His treatment was primarily dictated by circumstance—the Trebonianus Gallus had reportedly fallen apart after its purchase—but may well have been undertaken with an eye to the market. That mercantile factors could have consequences for the manner of a restoration recalls the situation in early-nineteenth-century Naples, where much of the concern regarding the nature of restorers' work was occasioned by objects on the art market. The Child with a Bulla (Paris, Musée du Louvre), discussed here by Sophie Descamps-Lequime and her colleagues, presents a different case. It was sold in fragments and its new owner made arrangements for the restoration, which probably took place in a foundry (the Delafontaine Workshop) where a variety of architectural adornments and sculptures were produced.

The study of the bronzes from Herculaneum and Pompeii illustrates the ways in which restorers dealt with finds from the ongoing excavations. In a number of cases, however, Paderni and his associates worked on bronzes that had been treated in previous decades. In our study

of the Apollo Saettante, we offer another example, noting that the statue's drapery was replaced around forty years after its initial restoration, and that an earlier repair to the right foot had to be rectified. The non-Neapolitan case studies presented here shed further light on the ways in which restorers negotiated previous restorations, and accordingly extend this volume's scope beyond our initial focus on the nineteenth century. The Child with a Bulla, for example, though recorded in Paris in 1809 in fragments (it entered the Louvre in 1825), had already undergone two phases of restoration in previous centuries. The Minerva of Arezzo, discussed by Salvatore Siano, witnesses a similar situation. Evidence suggests that it was first restored in the sixteenth century. It received a new right arm (in plaster) in the early eighteenth century, but by 1785 that arm—having been removed—was replaced with one in bronze made by Francesco Carradori. In this case the restoration seems to have been informed by the context of the statue's display. For in 1782 the Minerva had been moved to the Corridoio di Mezzogiorno in the Uffizi, where it stood alongside other famous ancient bronzes. Among them was the Arringatore (Florence, Museo Archeologico Nazionale), which Siano suggests was an inspiration for the orientation of the Minerva's new right arm added by Carradori. Notably, the Arringatore is also mentioned by Descamps-Lequime and her colleagues in their discussion of the Child with a Bulla, and its recurrence highlights the way that certain preeminent statues may have been models, unconsciously or not, for restorers.

The Minerva, the Trebonianus Gallus, and the Child with a Bulla are all considered here as individual case studies. Uwe Peltz's essay returns to the issue of antiquities restored and conserved in a museum. Of the four statues of youths that he investigates, however, three had already been worked on elsewhere before they entered the collection of the Altes Museum in Berlin: the Hypnos from Jumilla (which was displayed in Madrid as a dancer), the Youth from Salamis, and the Praying Boy from Rhodes, whose discovery goes back to the late fifteenth century. Peltz's first focus is a specific intervention tailored to display requirements—rotating bases (a device that Milanese also records in Naples), which seem to have been popular in the nineteenth century but had fallen out of fashion by the beginning of the twentieth. Peltz next highlights the varying approaches to surface treatment—not only the methods used to clean the surfaces of corrosion but also the philosophies that were brought to bear on such work. Particularly compelling is the role played by contemporary conceptions of what an ancient bronze should look like, most vividly embodied in the case of the Xanten Boy (Berlin, Neues Museum). Its gleaming surface resulted from the unusual conditions of its burial in the freshwater riverbed of the Rhine, yet the statue prompted skepticism from those who thought that it was the product of excessive cleaning.

As the 1818 Naples legislation (noted above) highlights, the presence of a patina has long played a key role in the judgment of an ancient bronze. Many of the sculptures discussed in this

volume justify the concern about patination: consider the Ephebe from the Via dell'Abbondanza, which Amedeo Maiuri mistakenly interpreted as having been gilded rather than overcleaned, or the Trebonianus Gallus, whose surface was obscured by the thick black layer (a mixture of wax and paint) applied by André. A number of the essays here testify to the importance of scientifically analyzing the materials used to produce a new patina. Milanese tantalizingly concludes his essay with a reference to the famous Neapolitan restorer Raffaele Gargiulo, who devised his own recipe for a patina,[16] as well as an adhesive for restoring bronzes. Further research will shed light on these and other materials utilized by restorers, which can sometimes assist in fixing a terminus ante or post quem for their application. More broadly, they help us to understand the context of the restorations, for some (the use of chemicals or heat to bring about patination in a controlled manner, for example) presuppose knowledge of and familiarity with bronzeworking, whereas others (such as electroplating, overpainting, or lacquering, which employ other substances to mimic the appearance of a patinated surface) do not. With this in mind, the volume concludes with Luisa Fucito's essay on patination techniques employed by the Fonderia Chiurazzi—one of the main exemplars of the nineteenth-century foundry tradition in Naples.

The essays in this publication describe the wide array of techniques used by restorers of ancient bronzes, and the circumstances in which they were employed. The bronzes discovered at Herculaneum in the eighteenth century were restored in a foundry, and the methods and materials that were used are often particular to that setting. Many other bronzes discussed here, however, reveal techniques from outside the foundry, such as joining fragments with straps and screws rather than soldering, the pouring in of cement to stabilize a figure, and additions of other materials. In many cases these methods were occasioned by pragmatism and circumstance. This is true even at Naples, arguably the one place where we might be able to construct a narrative history, given the concentration there of ancient bronzes as well as archives and publications that record contemporary attitudes and workshop practices. We hope that this collection of essays prompts further cross-disciplinary research that will advance the study of the restoration of ancient bronzes and their place in the history of conservation. Intertwining archival, technical, and scientific data is a prerequisite of current conservation practice. At a time when other restored bronzes are being reassessed and conserved, the issues that recur throughout this volume—how an ancient bronze should appear, and the means by which this is accomplished—remain profoundly pertinent.

1 "The Chimaera of Arezzo," J. Paul Getty Museum, http://www.getty.edu/art/exhibitions/chimaera/; "Roman Ephebe from Naples," J. Paul Getty Museum, http://www.getty.edu/art/exhibitions/naples_ephebe/.

2 "Apollo from Pompeii: Investigating an Ancient Bronze," J. Paul Getty Museum, http://www.getty.edu/art/exhibitions/apollo_pompeii/.

3 Note, however, W. A. Oddy and I. M. McIntyre, "The Conservation of a Hellenistic Life-Size Bronze Statue in the British Museum," in *I bronzi di Riace: Restauro come conoscenza*, ed. A. Melucco Vaccaro and G. De Palma (Rome, 2003), pp. 77–83, on the Hellenistic bronze from Zifteh acquired by the British Museum in 1840; K. Gschwantler, "Der Athlet von Ephesos: Ein Projekt zur Restaurierung und Konservierung der Bronzestatue," *Jahrbuch der Kunsthistorischen Sammlungen in Wien* 91 (1995), pp. 287–93, on the Ephesian Apoxyomenos found in 1896; S. Descamps[-Lequime], B. Mille, and D. Robcis, "*L'Enfant à la bulle*: Histoire moderne d'un bronze antique," *Technè* 27–28 (2008), pp. 11–20, on the Child with a Bulla (further discussed by Descamps-Lequime et al. in the present volume); and U. Rohnstock [Peltz], "Die Odyssee des 'Betenden Knaben,'" *Restauro: Zeitschrift für Kunsttechniken, Restaurierung und Museumsfragen* 3 (May–June 1998), pp. 172–79, and "*Adorante da Rodi*: Le metallotecniche applicate sul bronzo antico dal XVI al XX secolo," in *I grandi bronzi antichi: Le fonderie e le tecniche di lavorazione dall'età arcaica al Rinascimento*, ed. E. Formigli (Siena, 1999), pp. 401–26, on the Praying Boy (discussed by Peltz in this volume).

4 Primarily C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005); G. Lahusen and E. Formigli, *Grossbronzen aus Herculaneum und Pompeji: Statuen und Büsten von Herrschern und Bürgern* (Worms, 2007). See also L. A. Scatozza Höricht, "Restauri alle collezioni del Museo Ercolanese di Portici alla luce di documenti inediti," *Atti della Accademia Pontaniana*, n.s., 31 (1982), pp. 495–540; U. Pannuti, "Ritratto di Epicuro in bronzo, dalla 'Villa dei Papiri' di Ercolano," *Atti della Accademia Nazionale dei Lincei*, 8th ser., 39, nos. 3–4 (1984), pp. 101–16; T. Caianiello, "Restauratori di sculture antiche a Portici: Dai 'primi errori sì decantati da più gente' all'acquisizione di un metodo di intervento (1739–1781)," *Dialoghi di storia dell'arte* 6, (June 1998), pp. 54–69 (we are grateful to Delphine Burlot for this reference); and G. Prisco, "Restauri per via di mettere, restauri per via di togliere: Alla ricerca di un metodo nelle officine di Portici," in *Herculanense Museum: Laboratorio sull'antico nella Reggia di Portici*, ed. R. Cantilena and A. Porzio (Naples, 2008), pp. 189–207.

5 "Restoring Ancient Bronzes in the Nineteenth Century," J. Paul Getty Museum, http://www.getty.edu/museum/symposia/restoring_ancient_bronzes.html.

6 See, for example, the essays in J. B. Grossman, J. Podany, and M. True, eds., *History of Restoration of Ancient Stone Sculptures* (Los Angeles, 2003). For a focus on a specific collection, see A. Fendt, *Archäologie und Restaurierung: Die Skulpturenergänzungen in der Berliner Antikensammlung des 19. Jahrhunderts* (Berlin, 2012).

7 See O. Rossi Pinelli, "From the Need for Completion to the Cult of the Fragment," in Grossman, Podany, and True, *History of Restoration* (note 6), pp. 61–71, who presents Rome as a locus for the discussion of these issues. Comparable attitudes can be found elsewhere in Europe: B. Bourgeois, "Le laboratoire de l'antique: Luigi Brocchi, restaurateur de vases au Musée Napoléon," *Technè* 32 (2010), p. 64, cites Aubin-Louis Millin, who in his *Dictionnaire des beaux-arts* (1806) demanded that a restorer, borne by a "keen love of truth," needs to "fill worn features with care" and to "recover only the parts that are damaged." Bourgeois (p. 69) also quotes Gilbert Romme, a deputy of the National Convention in Revolutionary France, who rejected the complete restoration of fragments of ancient sculpture, in order to leave a clear demarcation between the ancient and the modern. Similar views were expressed by R. P. Knight in *Specimens of Antient Sculpture* (1809); see B. Redford, *Dilettanti: The Antic and the Antique in Eighteenth-Century England* (Los Angeles, 2009), pp. 146–47 and, more generally, on British attitudes, see V. Coltman, *Classical Sculpture and the Culture of Collecting in Britain since 1760* (Oxford, 2009), pp. 84–116. In Berlin in 1830, Wilhelm von Humboldt condemned modern completions because they changed the nature of the ancient piece; see J. Paul, "Antikenergänzung und Ent-Restaurierung," *Kunstchronik* 25, no. 4 (April 1972), p. 95.

8 On the Parthenon marbles, see, among others, Pinelli, "Need for Completion" (note 7), pp. 66–68, and "The Surgery of Memory: Ancient Sculpture and Historical Restorations," in *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, ed. N. Stanley Price, M. K. Talley Jr., and A. Melucco Vaccaro (Los Angeles, 1996), pp. 294–96. On the Arch of Titus, see A. Conti, *Storia del restauro e della conservazione delle opere d'arte*, new ed. (Milan, 2002), p. 235.

9 See B. Bourgeois and F. Matz, eds., "'Une perfection dangereuse': La restauration des vases grecs, de Naples à Paris, XVIII^{e}–XIX^{e} siècles," special issue, *Technè* 32 (2010); M. Bentz and U. Kästner, eds., *Konservieren oder Restaurieren: Die Restaurierung griechischer Vasen von der Antike bis Heute*, Beihefte zum Corpus Vasorum Antiquorum 3 (Munich, 2007). On the special case of Naples in general, see C. M. Mattusch (ed.) *Rediscovering the Ancient World on the Bay of Naples, 1710–1890* (Washington, D.C., 2013)

10 *Peintures antiques et inédites de vases grecs tirées de diverses collections, avec explications par J. V. Millingen* (Rome, 1813), p. xi.

11 See P. D'Alconzo, "Naples and the Birth of a Tradition of Conservation: The Restoration of Wall Paintings from the Vesuvian Sites in the Eighteenth Century," ed. G. Ceserani and A. Milanese, special issue, *Journal of the History of Collections* 19, no. 2 (2007), pp. 203–14, and *Picturæ excisæ: Conservazione e restauro dei dipinti ercolanesi e pompeiani tra XVIII e XIX secolo*, Studi della Soprintendenza Archeologica di Pompei 8 (Rome, 2002); G. Prisco, ed., *Filologia dei materiali e trasmissione al futuro: Indagini e schedatura sui dipinti murali del Museo Archeologico Nazionale di Napoli* (Rome, 2009); and L. Melillo, "Dai cunicoli ercolanesi al Museo di Napoli: Conservazione e restauro dei 'quadri' dall'area vesuviana," in *Rosso pompeiano: La decorazione pittorica nelle collezioni del Museo di Napoli e a Pompei*, ed. M-L. Nava, R. Paris, and R. Friggeri (Milan, 2007), pp. 36–41.

12 Lahusen and Formigli, *Grossbronzen* (note 4), p. 159.

13 Lahusen and Formigli, *Grossbronzen* (note 4), p. 157.

14 Naples, Archivio Storico della Soprintendenza per i Beni Archeologici di Napoli e Caserta, XXI D 8, fasc. 10, cc. 3–4. Quoted in full by A. Irollo, "L'Officina dei restauri dei marmi del Real Museo Borbonico: Spunti per la storia, le figure professionali e i metodi," in *Gli uomini e le cose*, vol. 1, *Figure di restauratori e casi di restauro in Italia tra XVIII e XX secolo*, ed. P. D'Alconzo (Naples, 2007), pp. 59–79, and discussed further both in Andrea Milanese's essay in this volume and in ours.

15 On which, see E. S. Myers, "The *Antikythera Youth* in Its Context" (master's thesis, Louisiana State University, 2006), pp. 1–82. Further references are provided by Hemingway, McGregor, and Smith in this volume. Notably, the first bronze specialist considered to restore the Antikythera Youth was Wilhelm Sturm, who had just reassembled the Apoxyomenos from Ephesos to great acclaim (on which, see Gschwantler, "Athlet von Ephesos" [note 3]).

16 See also E. Martino, "Il Professor Raffaele Gargiulo e il Real Museo Borbonico," *Cronache Ercolanesi* 35 (2005), p. 234, on Gargiulo's account of how to eliminate a false patina.

ILLUSTRATION CREDIT
Fig. 1.1: J. Paul Getty Museum

2 | Exhibition and Experiment
A History of the Real Museo Borbonico

Andrea Milanese

Introduction

The Real Museo Borbonico (today the Museo Archeologico Nazionale) in Naples (fig. 2.1) is one of the oldest museums in Europe.[1] It was created in 1777 through the unification of two preexisting museums—thus its roots go back even further, to the middle of the eighteenth century. By the beginning of the nineteenth century its rich collections had made it one of the most visited, talked about, and illustrated museums in Europe, and there is no doubt that its fame was decisive in making Naples one of the most important ports of call on the Grand Tour.

The history of the Real Museo Borbonico, even more than that of contemporary institutions elsewhere in Europe, can be read as the story of a great laboratory. Within this structure, with greater or lesser awareness and employing solutions that did not always prove to be satisfactory, experts sought ways of overcoming problems and fulfilling requirements that in some cases had arisen for the first time in the history of museums and archaeology in the West. These efforts must be seen in the light not only of the museum's groundbreaking nature and the uniqueness of its collections but also of the broad scope of the functions that, right from its creation, it was called upon to fulfill. I shall therefore single out the elements that show how the museum acted as a laboratory where experiments were undertaken, particularly with regard to layout and restoration.

FIGURE 2.1. Drawing by Achille Vianelli (Italian, 1803–1894), lithograph by Francesco Wenzel (Italian, act. early nineteenth century), *Edifizio de' Reali Musei di Antichità e belle arti.* From *Napoli e i luoghi celebri delle sue vicinanze* (Naples, 1845), vol. 2, opposite p. 111.

The Real Museo Borbonico can be understood only if we bear in mind that the institution that came into existence in Naples in the second half of the eighteenth century was not simply a great royal museum. It was a structure embracing various different organisms, with the purpose not only of exhibiting (and conserving) the royal collections but also of managing the entire artistic and archaeological heritage of the Kingdom of Naples. To adopt modern terminology, we can speak of a "system of safeguarding,"[2] a system in which different institutions were set up to work alongside one another. It was no coincidence that they were located in the same building, and at times even placed under the direction of the same person. These institutions carried out (or at least tried to) a coordinated activity, within a specific legislative framework. In this sense, too, we can say that the Kingdom of Naples represented one of the most important and venerable laboratories in modern Europe for developing a concerted approach to safeguarding artistic heritage.

FIGURE 2.2. Installation view of the marble sculpture of Ferdinand IV as Minerva (inv. 10833), by Antonio Canova (Italian, 1757–1822), in the Museo Archeologico Nazionale, Naples. The statue was commissioned in 1800 and completed in 1816. It was set up in the alcove on the main staircase of the Real Museo Borbonico. On the unification of Italy it was removed from view, but was returned to the spot in 1997.

The Origins of the Real Museo Borbonico

So back to the year 1777. For a little over forty years Naples had been the capital of a kingdom that had regained its independence after two centuries of rule by viceroys (mainly Spanish but also Austrian). The kingdom was governed by the Neapolitan Bourbon family, closely related to the Bourbons who were ruling in Spain. In these years the monarchy could count on the support of the majority of the intellectual class. Culturally, Naples was a lively city, participating in the spirit of the Enlightenment that reigned in many other European capitals. In 1780 one of the leading Neapolitan exponents of the Enlightenment, Gaetano Filangieri, published the first two volumes of his *Scienza della legislazione*, which immediately became widely known, were extensively translated, and served as a point of reference for Benjamin Franklin, among others. The city was home to a number of prestigious cultural institutions, such as the university (one of the oldest in Europe), various academies (including the Accademia di Disegno, which trained future artists), and the Teatro San Carlo opera house (Naples was one of the capitals of music making in Europe). In addition, the city had two famous royal museums that brought the ruling family great prestige in the eyes of other European courts: the Museo Farnesiano di Capodimonte and the Herculanense Museum at Portici. In 1777 the young king Ferdinand IV (fig. 2.2) decided to bring them together, creating a single centralized museum for the capital. This represented a major advance in terms of museum organization and brought into existence the Real Museo Borbonico.

What were the characteristics of the two preexisting museums, and what was at stake in their unification? Both had been inaugurated during the 1750s by Ferdinand's father, Charles VII, who had been the first monarch of the Neapolitan Bourbon dynasty. Although the collections differed in nature and origins, the museums had an important feature in common: both were located inside royal residences. This made them direct expressions of the king's will, as well as his private property (though the latter description is ambiguous, since in an absolute regime the concepts of king and state come close to coinciding). Of course, anyone wishing to visit either of these museums needed to obtain a permit from the king, but this was rarely denied, and the museums were seen by many intellectuals, artists, aristocrats, and illustrious Grand Tourists.

The Museo Farnesiano di Capodimonte had been created to house the collections that Charles VII inherited from his mother, Elizabeth Farnese, now queen of Spain. It was also a political project—one Elizabeth shared—to ensure that the new Kingdom of Naples should have a capital worthy of its standing. The rich collections of the Farnese family, of which Elizabeth was the last descendant, had until then been divided up among the family palaces and gardens in Rome and Parma; they constituted one of the largest private museums in Europe during the Renaissance and Baroque ages. Particularly famous were the Greek and Roman marble

sculptures and the gems and coins, as well as the highly prized picture collection. All these collections, as well as the fine Farnese library, were brought to Naples soon after Charles ascended the throne, in 1734, with the exception of the sculptures, which were transported from Rome only fifty years later. From the end of the 1750s the collections were laid out in a specially designated wing of the Royal Palace of Capodimonte, which Charles had begun to build in 1738.

The Herculanense Museum, inaugurated in 1758, owed its existence to the excavations of Herculaneum (begun in 1738) and Pompeii (begun in 1748). It occupied a specially converted wing of another of Charles's palaces, in Portici, about twenty miles from the capital, on the lower slopes of Mount Vesuvius looking out over the Bay of Naples—a spot where Charles went hunting. Over the next thirty years this museum became famous throughout Europe. Johann Joachim Winckelmann visited it on two occasions, in 1758 and 1762. Writing in 1765, Jérôme Lalande described it as the richest and most interesting museum to be seen in Italy, adding that nothing in Europe came near it,[3] and in 1787 Goethe called it "the alpha and omega of all collections of antiquities."[4] Here it was strictly prohibited to make drawings of the objects on display, which was a constant source of irritation to visitors, who were obliged to commit everything to memory. The museum illustrated everyday life in ancient times through a vast and unprecedented range of art objects (such as wall paintings, which had never previously been found in such quantities, and bronzes, including those from the Villa dei Papiri at Herculaneum, which achieved immediate fame) as well as items of daily use (such as the remains of textiles and foodstuffs). This wealth of objects was laid out in the museum's fifteen rooms, organized primarily by typology and class, in a display that was constantly changing as newly unearthed objects were brought in. The museum truly provided visitors with the physical reality of antiquity: one need think only of the imprint of a woman's breast, found in the Villa of Diomedes at Pompeii, that aroused an outcry at the time of its discovery.[5]

The museum was the venue for some of the most significant advances in museographical practice in Europe. Take, for example, the pedagogically modern idea of reconstructing a kitchen from Pompeii, presented in room 7 of the museum. The very link between archaeological dig and museum exemplified how excavation, documentation, drawing, restoring, and display of the objects were closely related. The museum had its own foundry, where the bronzes were restored, and workshops for restoring the marble sculptures and the mosaic flooring that was removed from the ancient houses and re-created inside the museum.

The Herculanense Museum was linked primarily, but not exclusively, to the excavations of Herculaneum and Pompeii. The people employed in the museum and on-site were also required to take charge of finds from other parts of the Kingdom of Naples: from Pozzuoli, Baiae, Paestum, and Capua, and also from as far afield as Abruzzo and Calabria. The Kingdom of Naples

was particularly rich in evidence of previous civilizations, whether Greek or Roman, and the king was aware of this extraordinary treasure trove and the risks of allowing it to be casually dispersed abroad. From as early as 1755, Charles introduced a law intended to monitor and regulate all exports of art objects and antiquities. This law did not prohibit engaging in commerce with foreign buyers, but it imposed the obligation of applying for permission to export and having the artworks inspected by a commission of experts (a painter, a sculptor, and an antiquarian).

In 1785 a first set of regulations concerning excavations in the kingdom was introduced, prescribing that private individuals needed to apply for permission to dig. Also in this year the post of superintendent of excavations in the kingdom was created. From 1807 this position was combined with that of director of the Real Museo in Naples—tangible proof of the close relationship between museum and excavations that had been inherited from the Herculanense Museum, and that had now been officially extended to all the archaeological sites in the kingdom. This precocious link between museum and excavations was not exclusive to Naples. It was to be a key, and perhaps defining, element in the tradition of cultural safeguarding in Italy, where museums have always had a more or less symbiotic relationship with their surroundings, whether these are archaeological digs or churches and palaces.

The First Phase of Organizing the Museum, 1777–1806

When Ferdinand IV decided, in 1777, to bring together on a single site all his collections of art and antiquities, the choice of venue was the Palazzo degli Studi, a seventeenth-century building situated in the heart of the city that had housed the Naples university and that needed to be restored and considerably enlarged (fig. 2.3).[6] For Ferdinand's idea was not limited to creating a new royal museum from the collections of the two museums discussed above, as well as the more than one thousand Farnese marbles then still scattered about Rome. His project was more ambitious. Room also had to be found for the Real Biblioteca Borbonica, the Accademia di Disegno, the Real Società Borbonica (comprising three academic bodies, one of them the Real Accademia Ercolanese di Archeologia), the Laboratorio delle Pietre Dure (a royal manufactory that Charles VII had copied from its famous counterpart in Florence), and the various restoration laboratories that had formed part of the museum in Portici. As we learn from a blueprint drawn up by the court painter Jacob Philipp Hackert, all the collections were to be open to the public—an important innovation, matched by the fact that the venue was not a royal residence.

FIGURE 2.3. Louis Jean Desprez (French, 1743–1804), *Antiquities Found at Herculaneum Being Transported to the Naples Museum,* ca. 1782. Pen and black ink and watercolor, 22 × 35.8 cm (8⅝ × 14 in.). London, British Museum (inv. 1864,1210.502). The work is a print study for Jean Claude Richard de Saint-Non, *Voyage pittoresque; ou, Description des royaumes de Naples et de Sicile*, vol. 1 (Paris, 1782), pl. 2, no. 95.

Work on refurbishing the Palazzo degli Studi began in 1778, overseen by the Roman architect Ferdinando Fuga, soon to be replaced by Pompeo Schiantarelli. All the numerous plans that were submitted envisaged doubling the volume of the building. Unfortunately, the following two decades were a time of political upheaval in Europe, with events that affected the court in Naples

(the queen, Maria Carolina, was the sister of Marie-Antoinette), and the building project had to be drastically reduced. A second floor was added (though not finished), but the total space was never in fact doubled. When Ferdinand fled from Naples to Palermo in 1799, the year of the Parthenopean Republic, the only institutions to have been moved into the Palazzo degli Studi were the Real Biblioteca Borbonica and the Accademia di Disegno (under its director, Wilhelm Tischbein, traveling companion to Goethe, who was enthusiastic at the prospect of teaching his students in front of the celebrated monumental Farnese Hercules). Building work was still going on while material coming from both Portici and Capodimonte was beginning to accumulate in a disorderly fashion within. In fact, it was not the Bourbon court but the French rulers, Napoléon's close relatives, who began to organize the museum layout over the next few years.

In this early phase of the history of the Naples museum, the nature and scope of the project bear emphasizing. What was being created was a genuine palace of culture, not in a royal residence but in a specially designated venue. With the incorporation of the Accademia di Disegno, the museum was designed to be part of the system of artistic education: a school-cum-museum, in a juxtaposition typical of Enlightenment thinking. Bringing the collections together made it possible to exhibit the entire range of artistic culture, from Greek and Roman antiquity to the painting and applied arts of the Renaissance and Baroque periods. The aim that was at the origin of all Europe's major royal museums–a royal or aristocratic household's achieving prestige by accumulating and displaying objects of rare antiquity and high artistic merit–was now increasingly yielding to a cultural policy clearly linked to the Enlightenment principle whereby the duties of a monarch—still absolute, certainly, but also "enlightened"—included contributing to civilization and progress in society. As the abbé de Saint-Non remarked, the new institution in Naples represented "a proper homage rendered by one Nation and in an enlightened century to the fine arts that have been passed down to us, their splendor giving new luster to Italy and to modern Europe."[7]

The well-intentioned king conceded his private collections of art and antiquities for the use and instruction of his subjects (who were still not "citizens"), but the concession was *not* a gift to the nation. Even at his most enlightened, Ferdinand remained an absolute monarch, and as such he kept not only the museum but also the archaeological sites of Pompeii and Herculaneum as his private property. They did not count even as property of the Crown—and here we have one of the most startling contradictions of the Museo Borbonico, which persisted until 1860.

A further contradiction can be seen in the disparity between the scope of the project and the limitations of the venue, whose size, as mentioned above, was never doubled as intended. The lack of space—one has only to think of the constant influx of finds, particularly from Pompeii—tended to suffocate the museum right from its opening and remained a constant problem.

It hampered the realization of some interesting projects for exhibiting objects, and a century later was to lead to the splitting up of what had been intended as a cohesive whole.

The Second Phase: Innovations in the "French Decade," 1806–1815

With the French conquest in 1806, when first Joseph Bonaparte (fig. 2.4), brother of Napoléon, and then Napoléon's brother-in-law Joachim Murat ascended the throne of Naples, a new phase began for the royal museum. At the beginning of this "French decade," which lasted until 1815, the building still looked like a disorderly warehouse for art objects, no more or less than a museum in the process of being laid out. Worse still, it was lacking much of its contents, since whatever was precious and small enough to transport had been shipped off to Palermo, where Ferdinand had taken refuge.

FIGURE 2.4. Jean Baptiste Joseph Wicar (French, 1762–1834), *Joseph Bonaparte,* 1808. Oil on canvas, 230 × 176 cm (90½ × 69¼ in.). Musée national du château de Versailles (inv. MV5136). Joseph, king of Naples from 1806 to 1808, holds a plan of the Palazzo degli Studi, whose facade can be seen in the background.

The Layout of the Museum

In this period there were at least three significant innovations concerning the museum and the system of safeguarding. First, the layout of the museum was completed. A number of rooms were opened to the public, with specific visiting times. As we have seen, public access had been the intention of the Bourbon dynasty, and it is a strange twist of history that it should have been accomplished, in about 1808, by the French rulers. After all, some sixteen years earlier it had been the French who, in nationalizing the royal collections and opening them to all citizens, created the first great public museum in the modern sense of the term, one belonging to the nation, when the Muséum français (as the Musée du Louvre was then known) opened its doors in 1793.[8]

Great prominence was given in Naples to the Museo delle Statue (the marble statues had remained in Naples on account of their size). This collection occupied three porticoes, a large open-air courtyard, and a long succession of rooms on the ground floor. Not only could the Naples museum boast of numerous and representative examples of this category of objects; it was also the museum that best lent itself to the drawing of parallels between ancient and modern art, an exercise typical of the Neoclassical spirit then in vogue in French-ruled Naples. Every effort was made to put the sculptures on display to greatest advantage as soon as possible. No fewer than three projects for their exhibition were commissioned (from two of the museum architects and jointly from the set designer at the Teatro San Carlo and the sculpture professor at the Accademia di Disegno), and on certain points the authorities sought the opinion of the greatest living sculptor, Antonio Canova. None of the projects presented was based on a chronological arrangement, and this was in line with contemporary practice. No major collection of marble statues that had been formed over the previous decades was ordered in such a way. The knowledge scholars then possessed was based almost exclusively on Winckelmann's historical

approach, which, though it had laid the foundations for a history of ancient art, lacked the data and expertise to be truly systematic. Moreover, it was one thing to classify works in art-historical terms, another to arrange museum collections. Museums are bound to be short of some types of objects and to have too many of others. The sculptures that were then to be found in European museums, and those in Naples especially—almost all of them Roman copies and reelaborations of Greek models—are still difficult to date with any precision today, and doing so would have been even more problematic before the great excavation campaigns in Greece and the Near East. Thus the criterion for display that was proposed and subsequently adopted was primarily iconographic (works were grouped according to subject), frequently mixed with merely decorative considerations, abiding by the rules of symmetry and a well-proportioned distribution.

Indeed, iconography and decorative considerations were the two most common criteria adopted in the leading museums of the age: in the Townley Gallery at the British Museum, also in 1808, where the decorative approach prevailed; in the Museo Pio-Clementino, in Rome, which had just been laid out by the archaeologists Giovanni Battista Visconti and his son Ennio Quirino; and in the Musée Napoléon (as the Louvre was called from 1803 to 1815), in Paris. In the Naples museum the iconographic criterion prevailed, in galleries "degli Imperatori," "delle Divinità," "delle Veneri," and "delle Muse." In other galleries, however, it proved impossible to find a single coherent theme (for example, the Portico de' Miscellanei). Here the only criterion of installation was often to place the most important object in a central position, so that the room took its name from the object in question (the Vestibolo di Ercole, the Sala dell'Ermafrodito).

In at least two of the projects for the layout of the marble statues, pride of place was given to the Cortile delle Statue, a genuine portal to the collection that had a venerable pedigree stretching back, as we know from the Villa dei Papiri, to Roman times. In the project drawn up by the architect Francesco Maresca, there was a courtyard-cum-garden with many Romantic touches: with studied disorder, sculptural and architectural fragments, basins, and sarcophagi were placed around the flowerbeds. More Romantic still (in fact, almost Gothic in style), and clearly inspired by a garden featuring ruins, was the courtyard envisaged by the set designer Domenico Chelli and the sculptor Heinrich Schweickle. For one corner of their courtyard-cum-garden they proposed a sort of reconstructed graveyard, with "plants of lugubrious foliage" and four reassembled ancient tombs, surrounded by gravestones and stelae and a scattering of sarcophagi. Such a scene inevitably invites comparison with some of the sepulchral paintings then being produced by that most Romantic of German artists, Caspar David Friedrich, but even more patently we can recognize elements that must have come from the Musée des monuments français, in Paris, designed by Alexandre Lenoir and opened to the public in 1793. Its garden, called the Élysée, had been laid out with the same Romantic taste for the poetry of churchyards (fig. 2.5).[9] However, at

FIGURE 2.5. Hubert Robert (French, 1733–1808), *The Élysée of the Musée des monuments français,* 1803. Oil on canvas, 37 × 45.8 cm (14⁹⁄₁₆ × 18¹⁄₁₆ in.). Paris, Musée Carnavalet (inv. P1750)

FIGURE 2.6. View of the western courtyard of the Real Museo Borbonico. From *Real Museo Borbonico*, vol. 2 (Naples, 1824), frontis.

the Naples museum neither of these projects was adopted, and eventually the courtyard was laid out according to a more rational approach, with the museum's numerous architectural fragments displayed in an orderly arrangement (fig. 2.6). Some engravings dating from a few years later give us an idea of the exhibition of the marble sculptures in the Naples museum in the years from 1806 to 1810 (fig. 2.7). The other collections laid out and on view in these years were the picture gallery (then arranged according to a fundamentally decorative criterion), the Italo-Greek vases (fig. 2.8), the ancient glass objects, and the papyrus scrolls.

The Creation of the Real Museo e Soprintendenza agli Scavi del Regno

The second important initiative in Naples was the official creation of the administrative structure known as the Real Museo e Soprintendenza agli Scavi del Regno. Once again the groundwork had been laid during the Bourbon reign, but the organizational structure came into being only in 1807, under the direction of Michele Arditi (1746–1838), a member of the Accademia Ercolanese. It is interesting to note that, alongside a small number of curators and architects who worked in close collaboration with the director, there was a significant number of artist-restorers, which remained more or less constant throughout the first half of the nineteenth century. Outnumbering any other category of personnel, they made it possible for the various restoration workshops in the Real Museo to function; the workshops dealt with paintings, marble sculptures, bronze sculptures and all metal objects, Greek vases, and mosaic floors. Those employed in the last workshop were responsible for placing and conserving in the various rooms of the museum—numbering, in 1820, no fewer than fifteen—the flooring or fragments of flooring in mosaic or opus sectile that had been removed from houses in Pompeii and Herculaneum (and elsewhere) and that had in some cases already been mounted in the Herculanense Museum. This was a way not only to exhibit ancient artifacts but to recall, or re-create, the ancient decorative contexts within the museum.

In addition to the restoration workshops there was a singular workshop devoted to producing cork models of buildings and of other architectural features. These models were one of the distinctive achievements of the Real Museo, and within a few years a specific section was created to feature them, testifying to a particular interest in documenting ancient architecture.

Legislation

The third significant innovation in the decade of French domination in the Kingdom of Naples was in the legislative sphere. In 1807 and 1808 new regulations were drawn up concerning excavations and exports of art and antiquities. To oversee the latter the Commissione di Antichità e Belle Arti was set up, working closely with the museum and presided over by its director. The

FIGURE 2.7. Drawing by D. Ferrara, engraving by Giac. Morghen, *Statue in marmo, Portico de' due Balbi.* From Achille Morelli, *Musée royal Bourbon: Vues et descriptions des galeries* (Naples, 1835), pl. 11. The Portico de' due Balbi was also known as Portico delle Divinità.

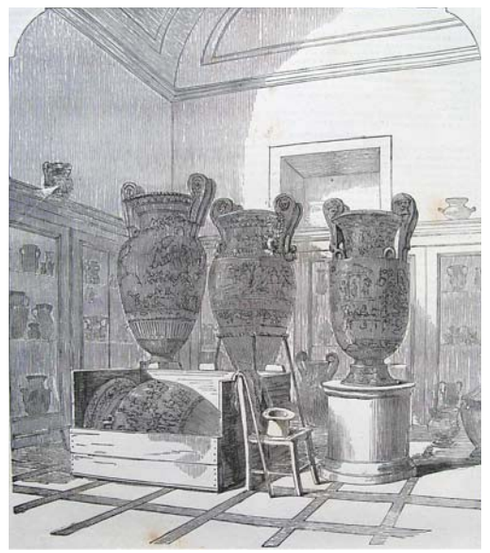

FIGURE 2.8. *New Room at the Royal Museum at Naples.* From *The Illustrated London News,* June 10, 1854

legislation thus sanctioned the regular involvement of the Real Museo in controlling the flourishing market in art and antiquities. At the same time, of course, the museum was also an actor in the market, since it, too, made purchases in order to increase its collections (for many years the majority of purchases were of paintings and Greek vases—the two categories of works most commonly exported from the kingdom). Nonetheless, I would suggest that it was a project that was never put into practice that most deserves to be recalled from these years. This was a proposal for a law drawn up by the museum's director, Arditi, that had implications for the history of the modern museum, and is highly indicative of how the Naples museum was conceived at that time.

True to the Enlightenment spirit, Arditi believed that in the long run the best way to check the illicit excavating and commerce that went on throughout the provinces of the kingdom was to rely on education and the formation of a discerning taste. To this end, in 1808 he proposed the creation of a network of provincial museums, one in each of the main cities throughout the kingdom.[10] These museums would serve to instill in the population a love for the local heritage and the wish to conserve and collect antiquities. Moreover, these satellite museums surrounding the museum in Naples would make it possible to strengthen the relationship between the center and the periphery. The museum in Naples would occasionally benefit by acquiring some of the most valuable objects found in the provinces. Arditi's proposal shows clearly that the museum in Naples was now intended to be not simply "universal" (as in the eighteenth-century projects) but also national, representing the history of the Neapolitan nation. As Arditi put it in 1820: "Our Nation, being the heir of Magna Graecia, is the envy of all the great powers; and this is why we should do everything possible to proceed in this direction that can make us great."[11]

The Third Phase, 1815–1828

With the Bourbon Restoration, in 1815, we come to the last phase in the protracted formation of the museum (from 1816, officially the Real Museo Borbonico). The return to Naples of Ferdinand, and above all the return, in 1817, of the objects that the king had shipped off to Palermo, made it possible to exhibit all the collections that had been intended for the royal museum. This became a reality within a decade. By 1828 the Museo Borbonico had taken on its definitive form and was fully functional. Between 1817 and 1819 four new collections had been laid out: on the ground floor, the Portico delle Statue di Bronzo (next to the Museo delle Statue, described above); and on the first floor, the Gabinetto degli Oggetti Preziosi, the Gabinetto degli Oggetti Osceni, and the Galleria dei Bronzi Minuti. The names indicate that the underlying criteria for classification and exhibition were material, technique of manufacture, typology, and function.

The ancient bronzes in general—both the sculptures and the household implements—were a unique feature of this museum, since no other possessed them in such numbers or variety. The

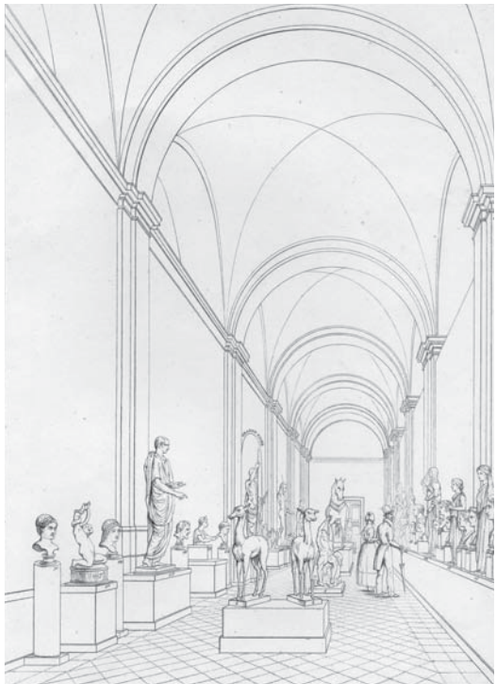

FIGURE 2.9. Drawing by J. Monetti, engraving by Jac. Morghen, *Statue di bronzo*. From Achille Morelli, *Musée royal Bourbon: Vues et descriptions des galeries* (Naples, 1835), pl. 17

museum's statues and busts in bronze were displayed in a long gallery (fig. 2.9), with no consideration either for chronology or provenience. The bronzes from the Villa dei Papiri would surely have gained from being presented as a separate group, not least since they had constituted a collection in ancient times. But one can hardly expect to find an interest in provenience, or its concrete reflection in museum layout, in museums in the mid-nineteenth century, when the chief emphasis was on the reconstruction of typological or chronological series. A detailed study of the Villa dei Papiri and the original arrangement of the sculptures was attempted only toward the end of the century (by Domenico Comparetti and Giulio De Petra), and this did not have consequences for their display until the early years of the twentieth century, in the case of the bronzes (it was not until 1973 that all the various materials found in the Villa dei Papiri were finally exhibited together). However, this should not be taken to mean that archaeologists in the nineteenth century, or indeed in the eighteenth, paid no attention to context. After all, in about 1750 the Swiss engineer Karl Weber was diligent in noting down on his plan of the Villa dei Papiri the findspots of many sculptures. In the same years the highly regarded Italian antiquarian Scipione Maffei declared that if everything were left exactly where it was, Pompeii would be the most interesting museum in the world.[12] In October 1765 the prime minister, Bernardo Tanucci, advocated leaving all the decorations of the Temple of Isis in situ, but a month later was obliged to change his mind when King Charles decided that all the paintings should be removed from the walls and conserved in the museum (and his prudence was soon vindicated by an unusual phenomenon—a snowstorm).[13] To give one final illustration, in 1850 Giuseppe Fiorelli published the old excavation journals from Pompeii, knowing that the information they contained was worth conserving, even though he gave little heed to provenience when he came to reorganize the museum in Naples a few years later.[14] The problem is that history, undoubtedly in the fields of taste and museums, has its own laws and its own rhythms. Far from being linear, it proceeds in an ambiguous, contradictory manner, full of shades of meaning, and this is all the more so when problems are being encountered for the first time.

The "bronzi minuti" (small bronzes), which occupied several rooms on the second floor, were amply represented in the museum. These were chiefly household items from the Vesuvian cities, but there were also objects from funerary contexts further afield, and they were all organized according to typology and function. The Gabinetto degli Oggetti Osceni, another exhibit unique to Naples, owed its existence to the puritanical spirit of the heir to the throne, the Duke of Calabria. The section contained over one hundred objects, in a variety of materials and across a wide chronological range, featuring erotic subject matter. Only adult males were entitled to visit it, armed with a specific permit from the relevant minister (it was nonetheless one of the most sought-after features in the museum, as is demonstrated by the huge number of requests

for permits from Grand Tourists from all over Europe preserved in the Archivio di Stato in Naples).[15] The Gabinetto degli Oggetti Preziosi, a genuine *Wunderkammer*, contained all manner of precious objects: gold, silver, gemstones, crystals, and ivories from different periods, as well as natural rarities and organic remains and foodstuffs found during excavations at Pompeii. A few years later, in a gesture toward a chronological arrangement, all the objects dating from modern times were taken out, to form a Gabinetto degli Oggetti del ’500.

The year 1821 saw the inauguration of the Galleria di Oggetti Egiziani, and the next year, the Gabinetto degli Oggetti Etruschi—both were among the first such galleries anywhere in Europe. They were made possible by the recent purchase of the Museo Borgiano, a splendid collection assembled in the eighteenth century in Velletri, south of Rome, by Cardinal Stefano Borgia, which Joachim Murat had been determined to buy in 1814, though the acquisition went through only the following year, when Ferdinand was back on the throne. Thanks to these two collections, Arditi could begin to map out an overall chronology for the museum—from the Egyptian and Etruscan collections through those of Greece and Rome, to medieval and modern times. Within these periods the different groups of objects broadly represented the main stages in the historical development of the various Western artistic civilizations. The Egyptian and Etruscan objects constituted the first links in this “chain of the arts,”[16] as Arditi put it. Contemporary museum practice was indeed to attempt to display the “progress” of the ancient artistic civilizations, just as, within the space of a couple decades, the natural sciences would try to demonstrate the evolutionary chain of living beings.

FIGURE 2.10. Drawing by Achille Morelli, engraving by F. Morghen, *Pitture antiche*. From Achille Morelli, *Musée royal Bourbon: Vues et descriptions des galeries* (Naples, 1835), pl. 8

In 1827 and 1828 the last two major collections opened to visitors: the celebrated Pompeian wall paintings (which had remained in the museum in Portici) and the inscriptions. The wall paintings were displayed on the ground floor, organized according to an iconographic criterion involving a hierarchy that went from paintings of figures to landscapes (fig. 2.10). The inscriptions were arranged according to language and subject matter. One of the many projects that were submitted but not implemented for the display of the inscriptions called for them to be incorporated in a garden on the hill of Santa Teresa, immediately behind the museum, where there was an ancient Greek necropolis that had been only partially excavated in previous years. In 1823 the suggestion was made to complete the excavation and include it in the tour of the museum, which would offer a suitably sepulchral setting for the funerary inscriptions in the Romantic style (reminiscent of the earlier plans for the Cortile delle Statue). Certainly this would have been an artificial construct, but the proposal, presented jointly by the director of the museum and Antonio Niccolini, the director of the Accademia di Belle Arti, did have a genuine and conscious didactic intent, linking the many vases on display in the museum to a typical provenience, namely a necropolis.

We know of various other projects from these and subsequent years, some of which became reality. There were of course a number of installation improvements made (such as the new tables for the gems that could be raised to reveal the stones' transparency, and numerous rotating bases that allowed sculptures to be viewed in the round).[17] In just a few cases the display of an entire collection was reorganized, and there had to be changes to make room for new acquisitions, which continued to pour in from the Vesuvian sites, and through purchases on the local market, and from further afield in the kingdom. There also continued to be proposals for reform: one particularly interesting suggestion was put forward by the constitutional government of 1848, according to which the museum was to host the university chairs in the history of art and in archaeology. But in practice the museum remained as we have seen it in about 1828 until 1860, when with the unification of Italy and the fall of the Bourbons it was to change its name and become the Museo Nazionale.

Restorations at the Real Museo Borbonico

I have referred to the Real Museo Borbonico as a "laboratory," and highlighted some experimental features in its history. We also find experimentation in the story of the restorations carried out in the museum. It is a subject that requires more work before any definitive conclusions can be drawn, but I end by offering a few insights into this practice. We have seen that from 1807 the Naples museum had a well-developed sector dealing with restoration, comprising five laboratories and numerous employees. These were all artists, mostly painters and sculptors, true to the contemporary idea of restoration. But from the outset one can detect divergent approaches within the museum, with some progressive standpoints existing alongside others that were more traditional or simply in step with the times. This is the case with the Pompeian wall paintings.[18] Whereas the restoration of all the other classes of objects adhered to a criterion that was traditionally integrative and mimetic, for the paintings we find an advanced attitude right from the start (that is, from the second half of the eighteenth century). The criterion here was not to introduce even the slightest integration, and this orientation is borne out in the engravings of the paintings that were published as they came to light. These reproductions faithfully indicated all the parts of the painting that were missing. There are factors that account for this special treatment, since the paintings were unique and particularly famous, having never been found elsewhere in such quantity. Nonetheless, this approach was remarkably bold and modern.

For all the other classes of objects, the practice was the contrary, at least until 1818. In the case of the vases, for example, the school of restoration in Naples was considered unmatched anywhere else in Europe for its mimetic and integrative skill (above all in painting). In February 1817, Arditi spoke with similar pride about the expertise of his restorers of bronzes—Giacomo

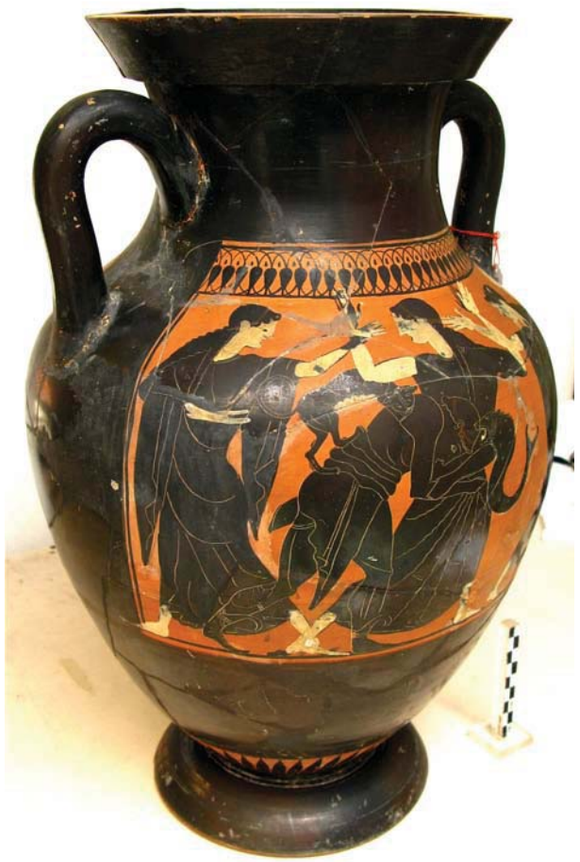

FIGURE 2.11. Attic terracotta black-figure amphora with Peleus and Thetis, attributed to the Red-Line Painter, 530–510 B.C. H. 47.5 cm (18⅝ in.), Diam. (body) 30.5 cm (12 in.). Naples, Museo Archeologico Nazionale (inv. 81178). This example of *mezzo restauro* was almost certainly carried out by Raffaele Gargiulo.

Ceci, Raffaele Gargiulo, and Raffaele Trapani—in imitating the ancient patina on the bronze sculptures to perfection.[19] The following year the situation changed radically. A royal decree dated January 15, 1818, prohibited any integrative restoration for all classes of ancient objects.[20] The premise of this decree, formulated by the Accademia Ercolanese, was advanced for the times. The new law stated that restorations were an obstacle to the correct interpretation of the objects (in making it impossible to distinguish what was original from modern integrations). One cannot help wondering whether the reason for this about-face may not have been that the "perfection" attained by the Neapolitan restorations had come to be seen as excessive. Already in 1813 the antiquarian James Millingen had spoken of "dangerous perfection,"[21] at least in the restoration of vases; the danger was for science first and foremost, but there was also probably some anxiety about the number of fakes that must have been circulating on the market.

The 1818 decree led to an immediate and total suspension of restorations, leaving the various laboratories, for vases and bronzes but also for marble sculptures, standing idle. This hiatus continued for three and a half years. Restoration work began again at the end of 1821, but now it had to abide by strict new rules. In practice, however, during at least the next twenty years we see that different methods coexisted, and at times the choices made seem to have fluctuated enormously. After all, in the fields of method and taste, innovations cannot be introduced by decree.

We know of several cases in which Greek vases restored without pictorial integrations in 1822 were reconsidered ten years later and subjected to the so-called complete restoration—that is, with the painting completely integrated. Gradually, a third solution began to gain currency. This was known as *mezzo restauro* (half restoration) and consisted of a pictorial recomposition of the missing parts of the vase, leaving the integrations visible on close inspection (fig. 2.11). This was a happy compromise between the satisfaction of the eye, or taste, and the more recent demand for safeguarding scientific data. This new solution is documented in Naples in the late 1820s and early 1830s, both in the museum and in private collections. In the meantime, Raffaele Gargiulo, undoubtedly the most important figure in the history of restoration at the Real Museo, had invented a glue for use on vases that was officially adopted by the museum.[22]

Bronze Restorations

In the restoration of bronzes, too, opinions and practice fluctuated, and the situation was, if anything, even more complex. The 1818 decree prohibited restoration of bronze sculptures because this almost inevitably led to the loss of the ancient patina, which the decree cited as the sole guarantee of authenticity. Thus it would seem that in the case of bronzes even the mere recomposition of a broken object was "dangerous." Following the suspension of all restoration, what had been turned out of the door found its way back in through the window. The museum employees

managed to obtain a modification to the decree, applicable to bronzes. A new regulation, of September 3, 1821, laid down that bronzes that were found whole in the excavations were merely to have the soil cleaned off.[23] Those whose handles had come off were to be treated, but without in any way affecting the ancient patina; and bronzes that were badly ruined could be restored and repatinated, but only with the supervision of a special commission for the restoration of bronzes, made up of the museum director, two members of the Accademia Ercolanese, an artist from the Accademia di Belle Arti, and two restorers: Raffaele Trapani (ca. 1700–after 1854), responsible for bronzes, and Raffaele Gargiulo (1785–after 1870), responsible for vases. And this was the procedure adopted over the next few years.

This was not, however, the end of the experiments or of the quest for new methods. In 1838, Gargiulo developed a new method for restoring bronzes that were particularly damaged and oxidized. From archival documents we know that this method was applied to some pieces from Ruvo, in Puglia. These were two pectorals and two headguards for horses, from the Ficco and Cervone collection, recently purchased in Ruvo (figs. 2.12–2.14), and two cuirasses and a helmet, from the recent royal excavations (figs. 2.15–2.17).[24] They were in such a fragmentary state and so badly deteriorated that restoration seemed impossible, but this master restorer had both the means and the ability to tackle such a project. Gargiulo had a profound knowledge of ancient materials and techniques. He had started out as a restorer of vases—and earned an excellent international reputation—but he had also worked with bronzes (in 1845 he restored the

FIGURE 2.12. Detail of a case in the Stanza delle armi in bronzo, with bronze horse pectorals and headguards from Ruvo, 1890–1900. Alinari 19070. Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Fotografico

FIGURE 2.13. Bronze horse pectoral from Ruvo, 6th century B.C. 130 × 20 cm (51³⁄₁₆ × 7¹⁴⁄₁₆ in.). Naples, Museo Archeologico Nazionale (inv. 5715). The photograph was taken just before restoration in 1996.

FIGURE 2.14. Bronze horse pectoral from Ruvo (fig. 2.13), after restoration in 1996, during which all the nineteenth-century integrations were removed.

FIGURE 2.15. Detail of a case in the Stanza delle armi in bronzo, with one of the bronze cuirasses (fig. 2.16) from Ruvo, 1890–1900. Alinari 19071. Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Fotografico

FIGURE 2.16. Bronze cuirass with head of Athena from Ruvo, 5th century B.C. 41 × 27 cm (16⅛ × 10¹⁰⁄₁₆ in.). Naples, Museo Archeologico Nazionale (inv. 5735). This cuirass has been cleaned since Gargiulo's restoration.

sculptures presented by Ferdinand II, king of the Two Sicilies, to Nicholas I, czar of Russia) and with Egyptian mummies (we know he worked on some in 1823). Surely it is another indication of his interest in the latest techniques that he was the first Neapolitan to appear in a daguerreotype. He was the maker of highly regarded reproductions of vases and bronzes, and also the author of various publications, including two well-known guides to the museum. Last but not least, he was a celebrated dealer in antiquities—perhaps the most respected figure in the field in the 1820s and 1830s—with a vast international clientele. A dealer who was also a senior employee of the Real Museo Borbonico, which was charged with monitoring and regulating the market—there you have another teasing contradiction of the museum. All things considered, Gargiulo must have been a man of many parts.

The method Gargiulo developed to restore the bronzes from Ruvo, which has yet to be properly analyzed (his restoration of at least one of the objects is still intact, see fig. 2.17), consisted fundamentally in consolidating the metal by causing an adhesive substance of his own invention to "penetrate," as he put it, into the most badly corroded parts. He never revealed the composition of this substance, referring to it as "mastice" or "glutine" (fig. 2.18). Presumably he used the same substance for more minor integrations. Then there was his personal patina, which was famous for its resemblance to the original patinas. The bronzes seemed to have been brought back to life. Certainly the result pleased both the king and the interior minister, Nicola Santangelo, who in addition to having a large private museum of his own was Gargiulo's protector. From what we can learn from the archives, this project seems to have been Gargiulo's last invention in the field of restoration, and brings to a fitting end the series of experiments we have tried to illustrate.

FIGURE 2.17. Bronze cuirass from Ruvo, 4th century B.C. 36.5 × 28.5 cm (14⁶⁄₁₆ × 11¼ in.). Naples, Museo Archeologico Nazionale (inv. 5696). This cuirass appears to not have undergone any interventions since Gargiulo's.

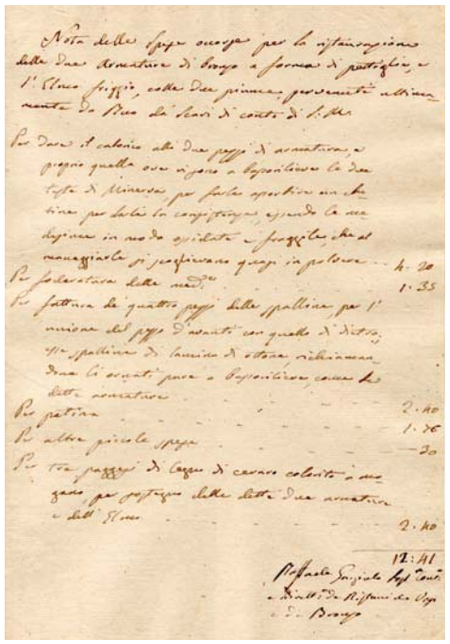

FIGURE 2.18. *Nota delle spese* (account of expenses) referring to restoration of the two bronze cuirasses from Ruvo (figs. 2.16, 2.17) by Raffaele Gargiulo in 1838. Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Storico, XXI C8, 16

1 For the history of the Museo Borbonico and its successive layouts, see Milanese "Il Museo Reale di Napoli al tempo di Giuseppe Bonaparte e di Gioacchino Murat: Le prime sistemazioni del Museo delle Statue e delle altre raccolte," *Rivista dell'Istituto Nazionale di Archeologia e Storia dell'Arte*, 3rd ser., 19–20 (1996–97), pp. 345–405; "Sulla formazione e i primi allestimenti del Museo Reale di Napoli (1777–1830): Proposte per una periodizzazione," in *Beni culturali a Napoli nell'Ottocento: Atti del Convegno di studi, Napoli, 5–6 novembre 1997*, Pubblicazioni degli Archivi di Stato, Saggi 61 (Rome, 2000), pp. 141–60; "L'attività giovanile di Giuseppe Fiorelli e l'esperienza nella Commissione per le Riforme del Museo Borbonico: Nascita di un protagonista della storia della tutela in Italia," in *A Giuseppe Fiorelli nel primo centenario della morte: Atti del Convegno, Napoli, 19–20 marzo 1997*, ed. P. G. Guzzo and S. De Caro (Naples, 1999), pp. 69–100; "Michele Arditi, il Museo Borgia e la 'catena delle arti': L'acquisizione delle raccolte borgiane e la loro sistemazione nel Real Museo di Napoli," in *La collezione Borgia: Curiosità e tesori da ogni parte del mondo*, ed. A. Germano and M. Nocca, exh. cat. (Naples: Electa Napoli, 2001), pp. 54–60; "Pietro Bianchi e il Real Museo Borbonico: Interventi architettonici e sistemazioni museografiche tra il 1821 e il 1845," *Napoli nobilissima* 4, nos. 1–2 (2003), pp. 27–46; "Dal Gabinetto degli oggetti preziosi alla Sezione delle arti industriali: Le gemme Farnese nel Museo di Napoli," in *Le gemme Farnese*, ed. C. Gasparri, 2nd ed. (Naples, 2006), pp. 107–12; "Iconografia, cronologia, contesti di provenienza: Un secolo di evoluzione negli allestimenti delle sculture del Museo di Napoli (1807–1903)," in *Le sculture Farnese: Storia e documenti*, ed. C. Gasparri (Naples, 2007), pp. 135–56; and *Album Museo: Immagini fotografiche ottocentesche del Museo Nazionale di Napoli* (Naples, 2009).

2 For the system of safeguarding the Neapolitan heritage in the eighteenth century, contemporary legislation on works of art, the two museums at Portici and Capodimonte, and the history of excavations in Herculaneum and Pompeii in the eighteenth century, see (with extensive bibliographies) A. Fittipaldi, "Museums, Safeguarding and Artistic Heritage in Naples in the Eighteenth Century," in "Antiquarianism, Museums and Cultural Heritage: Collecting and Its Contexts in Eighteenth-Century Naples," ed. G. Ceserani and A. Milanese, special issue, *Journal of the History of Collections* 19, no. 2 (2007), pp. 191–202 (and the essays by A. M. Rao and E. Chiosi, as well as the introduction by A. Schnapp, in the same volume); P. D'Alconzo, *L'anello del re: Tutela del patrimonio storico-artistico nel Regno di Napoli (1734–1824)* (Florence, 1999); R. Cantilena and A. Porzio, eds., *Herculanense Museum: Laboratorio sull'antico nella Reggia di Portici* (Naples, 2008); F. Zevi, "Gli scavi di Ercolano e le antichità," in R. Ajello et al., *Le antichità di Ercolano* (Naples, 1988), pp. 11–38; C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005); and S. De Caro, *Pompei ed Ercolano* (Rome, 1995).

3 J. J. de Lalande, *Voyage d'un françois en Italie, fait dans les années 1765 et 1766*, vol. 7 (Paris, 1769), p. 110.

4 J. W. Goethe, *Italian Journey, 1786–1788*, trans. W. H. Auden and E. Mayer (1962; repr., London, 1987), p. 326.

5 See E. M. Moormann, "Una città mummificata: Qualche aspetto della fortuna di Pompei nella letteratura europea ed Americana," in *Pompei: Scienza e società; 250° anniversario degli scavi di Pompei. Convegno internazionale, Napoli, 25–27 novembre 1998*, ed. P. G. Guzzo (Milan, 2001), pp. 14–15.

6 On the architectural history of the Palazzo degli Studi, one can still consult *Da Palazzo degli Studi a Museo Archeologico: Mostra storico-documentaria del Museo Nazionale di Napoli, giugno–dicembre 1975*, exh. cat. (Naples: Museo Nazionale, 1977), in particular the essays by F. Divenuto and C. Zucco.

7 J. C. R. de Saint-Non, *Voyage pittoresque; ou, Description des royaumes de Naples et Sicile*, vol. 2 (Paris, 1782), pp. 54–55.

8 On the idea of the museum during the European Enlightenment, I can single out two excellent essays in the extensive literature available: É. Pommier, preface to *Les musées en Europe à la veille de l'ouverture du Louvre*, ed. É. Pommier (Paris, 1995), pp. 14–32, and M. Fumaroli, "Naissance du musée moderne," in *Lille, chefs-d'œuvre d'un grand musée européen*, exh. cat. (Paris: Réunion des musées nationaux, 1995), pp. 13–49.

9 For the Romantic garden at the end of the eighteenth century, and the garden in the Musée des monuments français in particular, see C. de Bourgoing, ed., *Jardins romantiques français: Du jardin des Lumières au parc romantique, 1770–1840*, exh. cat. (Paris: Paris Musées, 2011), pp. 160–61.

10 For the proposed law on provincial museums, see A. Milanese, "Il piano Arditi del 1808 sui musei provinciali: Centro e periferia nella tutela in 'Magna Grecia,'" in *I Greci in Occidente: La Magna Grecia nelle collezioni del Museo Archeologico di Napoli* (Naples, 1996), pp. 275–80, and "Real Museo Borbonico e costruzione nazionale: Spunti di riflessione," *Mélanges de l'École française de Rome: Italie et Méditerranée* 113, no. 2 (2001), pp. 585–98.

11 Michele Arditi, letter to the interior minister, September 30, 1820. Quoted in Milanese, "Sulla formazione del Museo Reale di Napoli" (note 1), pp. 159–60.

12 See S. Maffei, *Tre lettere del Signor Marchese Scipione Maffei* (Verona, 1748), pp. 33–36.

13 On this episode, see P. D'Alconzo, *Picturæ excisæ: Conservazione e restauro dei dipinti ercolanesi e pompeiani tra XVIII e XIX secolo*, Studi della Soprintendenza Archeologica di Pompei 8 (Rome, 2002), pp. 54–57.

14 See G. Fiorelli, *Giornale degli scavi di Pompei: Documenti originali pubblicati con note ed appendici* (Naples, 1850); Milanese, "L'attività giovanile di Giuseppe Fiorelli" (note 1), pp. 73–74.

15 See M. Beard, "Dirty Little Secrets: Changing Displays of Pompeian Erotica," in *The Last Days of Pompeii: Decadence, Apocalypse, Resurrection*, ed. V. C. Gardner-Coates, K. Lapatin, and J. Seydl (Los Angeles, 2012), pp. 60–69.

16 Michele Arditi, letter to the interior minister, September 30, 1820. Quoted in Milanese, "Michele Arditi" (note 1), p. 56.

17 On rotating bases, see also Peltz in this volume.

18 On the restoration of paintings (both ancient and modern) in Neapolitan collections, see M. I. Catalano and G. Prisco, eds., "Storia del restauro dei dipinti a Napoli e nel Regno nel XIX secolo," special issue, *Bollettino d'arte* (2003); D'Alconzo, *Picturæ excisæ* (note 13); P. D'Alconzo and G. Prisco, "'Restaurare, risarcire, supplire': Slittamenti semantici ed evidenze materiali; Alle origini di una 'vernice' per i dipinti vesuviani," *Bollettino dell'Istituto Centrale per il Restauro*, n.s., 10–11 (2005), pp. 72–87; G. Prisco, ed., *Filologia dei materiali e trasmissione al futuro: Indagini e schedatura sui dipinti murali del Museo Archeologico Nazionale di Napoli* (Rome, 2009).

19 Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Storico, File of Raffaele Trapani.

20 On this decree, see A. Milanese, "'Pour ne pas choquer l'œil': Raffaele Gargiulo e il restauro di vasi antichi nel Real Museo di Napoli; Opzioni di metodo e oscillazioni di gusto tra 1810 e 1840," in *Gli uomini e le cose*, vol. 1, *Figure di restauratori e casi di restauro in Italia tra il XVIII e il XX secolo*, ed. P. D'Alconzo (Naples, 2008), pp. 89–90; and the article by A. Irollo in the same volume (where the text of the decree is published in its entirety, but with the erroneous date of January 25). This decree is also discussed by Risser and Saunders in the present volume.

21 *Peintures antiques et inédites de vases grecs tirées de diverses collections, avec explications par J. V. Millingen* (Rome, 1813), p. xi.

22 On Raffaele Gargiulo, see Milanese, "'Pour ne pas choquer l'œil'" (note 20), pp. 81–101, and "De la 'perfection dangereuse,' et plus encore: La restauration de vases grecs à Naples au début du XIX^{e} siècle, entre histoire du goût et marché de l'art," in "'Une perfection dangereuse': La restauration des vases grecs, de Naples à Paris, XVIII^{e}–XIX^{e} siècles," B. Bourgeois and F. Matz, eds., special issue, *Technè* 32 (2010), pp. 18–30 (and also the essays by L. Chazalon, U. Kästner, and M. Svoboda in the same volume).

23 Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Storico, XXI C8, 6. See also Risser and Saunders in this volume.

24 On the restoration of the four bronzes from Ruvo, from the Ficco and Cervone collection (today Naples, Museo Archeologico Nazionale, inv. 5711, 5712, 5714, 5715), see the report by Gargiulo, June

25, 1838, addressed to the museum's supervisor, Giovanni Pagano, and the *nota delle spese* (account of expenses) bearing Gargiulo's signature and dated November 3, 1838 (Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Storico, XXI D7, 1.18 [d]). On the restoration of the two cuirasses (inv. 5696 and 5735) and the helmet (inv. 5699?) from the royal excavations at Ruvo, see the two reports by Gargiulo addressed to Michele Arditi, February 15, 1838, and April 9, 1838, with the relevant *nota delle spese* (see fig. 2.18) (Naples, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Storico, IV B11, 47; XXI C8, 16); and the documents dated March 1838 (Naples, Archivio di Stato, Ministero Pubblica Istruzione, 338, 79). The nineteenth-century restorations to all the other bronzes from Ruvo have been removed in recent decades.

ILLUSTRATION CREDITS
Fig. 2.1: Getty Research Institute, Los Angeles (87-B27149)
Figs. 2.2, 2.13, 2.14: Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei
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Figs. 2.4, 2.5: Giraudon / The Bridgeman Art Library
Fig. 2.6: Getty Research Institute, Los Angeles (83-B6998)
Figs. 2.11, 2.16, 2.17: Andrea Milanese
Figs. 2.12, 2.15, 2.18: Angela Luppino

3 | Appearances Can Be Deceiving
The Presentation of Bronzes from Herculaneum and Pompeii

Carol C. Mattusch

Introduction

By the end of the fifteenth century, ancient columns, bases, capitals, reliefs, and inscriptions were being dug up around the Bay of Naples at places like Sorrento, Amalfi, and Ravello. Late in the sixteenth century, workmen digging a canal from the Sarno River to the town of Torre Annunziata tunneled through a hill known as La Città that was bristling with antiquities.

In 1709 a French cavalry commander employed by the Austrians—Emmanuel-Maurice, duc de Lorraine and prince d'Elboeuf—bought property at Granatello, overlooking the Bay of Naples north of Portici. He began to do what many other entrepreneurs were doing, digging outward from the bottom of a well on his property and bringing up antiquities, among them three fine marble statues of draped women, the largest one also veiled. They were all quietly removed from Naples, sent first to Rome for repairs—one of the smaller ones had no head and needed a new one made for her—and then to d'Elboeuf's cousin in Vienna, Prince Eugène of Savoy, and eventually to Augustus III, king of Poland and elector of Saxony, in Dresden.[1]

In 1734 the Spanish Bourbons took over Naples and Sicily from the Austrians, and the now independent kingdom had as its first king Charles VII, a son of Philip V of Spain and Elizabeth Farnese of Parma. Charles married Maria Amalia, the daughter of Augustus III, the owner of the three ancient marble statues that came to be known as the Herculaneum Women.

Under Charles VII (r. 1734–59), the city of Naples got the first opera house in Europe, which was built in six months flat, along with a poorhouse some 350 yards in length (the Albergo dei Poveri) and a few new royal palaces in addition to the one in the center of town. One of the new ones, a summer palace at Portici, adjoined d'Elboeuf's former property at Granatello, on the outskirts of the town of Resina. The man who surveyed the property at Portici for Charles VII was a Spanish military engineer named Roque Joaquín de Alcubierre, who began to dig on the site for the king in 1738. That year, digging in the same underground structure from which d'Elboeuf's marble women had come, workers found an inscription identifying the building as the theater of ancient Herculaneum. In this way they learned the name of the ancient city that they had found. Although the site was seventy or more feet underground and was therefore difficult to access,

this remoteness added to the mystery and the drama of the discovery, and fueled the enthusiasm for learning about the ancient world. A world that had previously been known primarily through ancient texts now seemed much more immediate, with the survival of its material remains. Charles VII owned the finds.

Ten years later, in 1748, Alcubierre surveyed La Città and began to dig what he thought was the site of ancient Stabiae, but it turned out to be Pompeii, and serious excavation began there in 1755. Pompeii was less than twenty feet underground, and it was quickly uncovered, soon becoming far better known than Herculaneum. But it was during the first twenty years of digging at Herculaneum (that is, of tunneling seventy feet underground) that the vast majority of large bronzes were found—in numbers that have never before or since been equaled at any one site. Most of the bronzes came from Herculaneum's theater, from the region of the so-called Basilica, and from a nearby seaside villa, now known as the Villa dei Papiri. Between 1738 and 1759 many marbles were found as well.

Restoring the Bronzes

What would the Spanish Bourbons do with all the ancient bronzes that were being discovered on their property? The opportunity for publicity was not lost on Charles VII (the legendary collections of antiquities, paintings, and books of his mother's family, the Farnese, would be brought to Naples later in the eighteenth century).[2] The first move that Charles made, in 1739, was to hire a restorer, a sculptor from Rome named Giuseppe Canart (1713–1791). Canart was responsible for restoring all the marbles and bronzes before they were displayed. Among the bronzes, there were soon nearly forty statues, many statuettes, a four-horse chariot, and thirty-two heads and busts for his workshop to repair. After they were restored in the Royal Foundry at Portici, they were installed in the summer palace there. In 1741 the Farnese collection of antiquities—all marbles—began to arrive from Rome, and Canart worked on them as well as on the finds from Herculaneum.

Given Canart's workload, it is no surprise that his records are brief and not particularly informative. One notation reads, "fifteen marbles and bronzes were restored; they [the bronzes] were arranged symmetrically, along with the marbles, in a gallery on the second floor of the palace, facing the mountain."[3] A couple of marbles are still in that wing today, one of them on the landing of the central staircase. As it turned out, the Bourbons had to have a new wing added to the summer palace to house their collection of antiquities.

One decision that Canart had to make quickly as antiquities arrived in Portici was what to keep and what to restore. Bronze heads and whole statues were of course saved, even if they were somewhat squashed or broken in pieces, as was the case with the statues and the chariot group from the theater. Some objects disappeared, and it was widely known that fragments that could

not be pieced together were being reused as scrap metal. One bust whose head was never recovered evidently served as a trial piece to determine how deeply to clean a bronze.[4] Today the bust (still without an inventory number) is on exhibit, which would have horrified the Spanish Bourbons (fig. 3.1).

The bronze chariot group that had been recovered in pieces from Herculaneum's theater in 1739 was in such poor condition that scholars argued about how many horses there were, and about whether they belonged to a two- or four-horse chariot. Eventually, Canart was charged with restoring a single horse from fragments of four (fig. 3.2). This was at the behest of Camillo Paderni (ca. 1715–1781), the painter from Rome whom King Charles hired in 1751 as director of the Herculanense Museum at Portici. Paderni took charge of all the finds as they arrived in Portici, and he was responsible for restoration of the paintings. His drawings of finds, such as his depiction of a bronze head with its curls replaced (fig. 3.3), remind us that as a painter he had his own agenda: the pale, pudgy face looks more like flesh than bronze.[5] From 1759 to 1763, after Charles returned to Spain (to rule as Charles III), Paderni continued to send him notes about finds along with his drawings of them.

FIGURE 3.1. Acephalous bronze bust of a woman wearing a peplos, from the Villa dei Papiri at Herculaneum, found March 15, 1754, 1st century B.C.–1st century A.D. Life-size. Naples, Museo Archeologico Nazionale (without inv. no.)

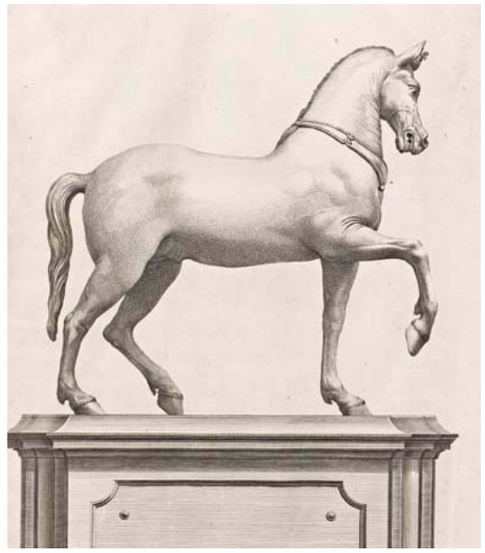

FIGURE 3.2. Reconstructed horse from a quadriga (Naples, Museo Archeologico Nazionale, inv. 4904), from the theater at Herculaneum, found in May 1739 in the excavations at Resina. Drawing by Giovanni Batista Casanova (Italian, ca. 1735–1795), engraving by Carlo Nolli (Italian, 1710–ca. 1785). From *Delle antichità di Ercolano,* vol. 6 (Naples, 1771), p. 257, pl. 66

FIGURE 3.3. Bronze head of a woman with ringlets (Naples, Museo Archeologico Nazionale, inv. 5598), from the Villa dei Papiri at Herculaneum, reported 1759. Drawing by Camillo Paderni (Italian, ca. 1715–1781). From *Monumenti antichi rinvenuti ne reali scavi di Ercolano e Pompej e delineati e spiegati da d. Camillo Paderni romano* (Naples, 2000), pl. IV top

The Publication of *Disegni intagliati*, 1746

The first publication of the artifacts from Herculaneum appeared in 1746, in the form of a large folio volume entitled *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Copper engravings of the ancient paintings discovered in the excavations of Resina), its cover embellished with the Bourbon insignia and coat of arms. By that date, however, the site had been known as Herculaneum for eight years. Furthermore, the title of the book does not reflect the publication therein of bronze and marble statuettes, lamps, and reliefs, interspersed with the paintings. Indeed, it is difficult to tell from the illustrations which are of paintings and which of three-dimensional objects. This first attempt at publication of the Bourbon finds survives in only three copies, and it is uncertain whether any more were produced.[6]

Ten pages of short entries about the items are followed by engravings of approximately one hundred finds, in no particular order. The brief description of each object does not mention findspot, medium, size, or condition. Whether to show the actual condition of a piece or to draw in the missing parts seems to have been left up to the artist. For example, Francesco Sesone (1705–1770) illustrated a small bronze relief, once attached to a chariot, of a cavalryman without a right hand, riding a horse that is missing its tail (fig. 3.4).[7] The shadow indicates that the pair is three-dimensional. The rider has wide eyes and a sweet smile, and the horse has a wild eye and an open mouth. Those features are absent, however, from the bronze that Sesone was illustrating: the rider in fact wears a helmet with the visor down, and the horse is cursorily rendered. It is interesting that a piece this small—it is less than ten centimeters (3⅞ in.) in height—is represented at all, and in some (albeit fanciful) detail, when by 1746 the Bourbon diggers had found eight full-size bronze statues, as well as the quadriga. Those were probably not yet ready for exhibition, and the chariot remains unrestored even today. Sesone did what he could to improve upon the horse and rider, not only adding detail but also providing a grassy ground beneath the horse that might lead one to imagine that the pair is of a substantial size.

FIGURE 3.4. Small bronze chariot attachment in the form of a horseman (Naples, Museo Archeologico Nazionale, inv. 5497), from the theater at Herculaneum, reported 1739. Engraving by Francesco Sesone (Italian, 1705–1770). From *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Naples, 1746), no. 35

Since so few copies exist of the *Disegni intagliati*, an atlas folio of which all three copies are bound in fine red morocco,[8] it is interesting to speculate why the king was dissatisfied enough with the project that he stopped production. Like the chariot appliqué, the published finds are all small, and must have seemed inconsequential next to the large frescoes that were also being recovered, such as the large mythological groups found in the so-called Basilica at Herculaneum in 1739. The small paintings of individual figures, oscilla, bronze attachments, and bronze statuettes catalogued in the *Disegni intagliati* would also have paled beside the large bronze portrait statues that Canart was beginning to restore. After restoration, these large works were featured in the displays of the Herculanense Museum at Portici, whereas most of the small early finds were not on view. If in later years illustrations of them appeared in the official publication *Delle antichità di Ercolano* (On the

antiquities of Herculaneum; 1757–92), they were not given full catalogue entries but, as disucssed below, were generally redrawn and used as small unnamed headpieces and tailpieces to texts about other artifacts, usually larger ones. Some of the objects, such as a bronze statuette of Hercules (fig. 3.5), were sent to Paris in 1802, to meet one of Napoléon's conditions for the reinstatement of Charles VII's son Ferdinand IV as king of Naples.[9] Others, such as the small bronze chariot attachments, remain in storage even today, and still others do not appear in the modern comprehensive catalogue of the collections of the Museo Archeologico Nazionale in Naples.[10]

FIGURE 3.5. Bronze statuette of Hercules (Paris, Musée du Louvre, inv. Br 32), probably from Herculaneum, reported 1739. Engraving by Francesco Sesone (Italian, 1705–1770). From *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Naples, 1746), no. 1

Winckelmann's Observations

None of the finds recorded in the *Disegni intagliati* is mentioned by Johann Joachim Winckelmann, who appeared in Naples in 1758, on the first of four visits to the city. This was the year in which the Herculanense Museum at Portici opened officially. Winckelmann's published remarks about what he saw and learned in Portici are scathing, as in this blunt telling of the story of the four-horse chariot from the theater at Herculaneum:

> All the pieces were gathered up and loaded onto a wagon, taken to Naples, and unloaded in the courtyard of the palace, where they were thrown on top of one another in a corner. The bronze group lay there like scrap iron for a long time. One piece and then another was taken away, so people decided to do something honorable with the rest of them, but what should it be? A large portion was melted down and cast into two large busts in relief of the king and the queen. I can imagine how these two pieces turned out, without even having seen them. They became invisible, and they were set aside when people began to notice this ignorant and irresponsible blunder. The remaining pieces of the chariot, horses, and figure were finally taken back to Portici and stored in the vaults under the royal palace, entirely out of public view.
> A long time later, the curator of the museum [Camillo Paderni] proposed putting together at least one horse from the remaining pieces of horses, and this idea was approved, so the bronze workers from Rome [Giuseppe Canart and his colleagues] who were assigned to work on other discoveries turned their hands to this work. The requisite pieces for one whole horse could no longer be found, and they had to cast a few new pieces, eventually putting together a single horse, a handsome one, which is installed in the inner courtyard of the museum.
>
> . . . In March 1759, while I was there, a heavy rain fell, water ran into the joins, and the horse got dropsy. They tried to conceal this disgrace of restoration with the utmost care: the courtyard of the museum was kept closed for three days until the water had been drained from the horse's belly. Today the horse still stands in this alarming condition, with no further repair.[11]

FIGURE 3.6. Bronze statue of seated Hermes (Naples, Museo Archeologico Nazionale, inv. 5625), from the Villa dei Papiri at Herculaneum, reported August 3, 1758. Drawing by Nicola Vanni (Italian, ca. 1720–ca. 1800), engraving by Nicola Fiorillo (Italian, ca. 1730–1805). From *Delle antichità di Ercolano*, vol. 6 (Naples, 1771), p. 115, pl. 29

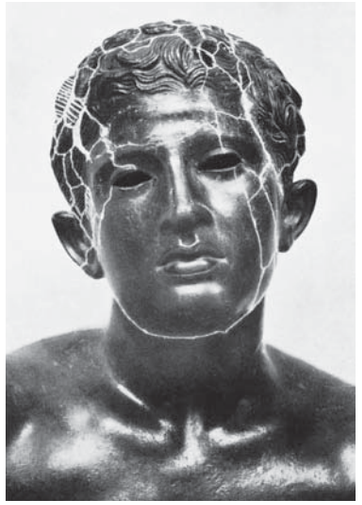

FIGURE 3.7. Head of bronze seated Hermes (Naples, Museo Archeologico Nazionale, inv. 5625) showing breaks. Photograph, with broken pieces outlined and repairs hatched, from Amedeo Maiuri, "Restauri di sculture in bronzo," *Bollettino d'arte* 1 (1948), fig. 1

Another story that made the rounds concerned the excavators' discovery of a bronze inscription, also evidently in the theater. As Winckelmann tells it, "Without first recording the inscription, they ripped the letters from the wall, threw them all together into a basket, and showed this mess to His Majesty. The first thought that ought to have come to anyone should have been, 'What do these letters mean?' But nobody knew enough to ask that question. For many years, the letters were hung up arbitrarily in the museum, and anyone could have the enjoyment of arranging them into words as he pleased."[12]

A seated life-size statue of a boyish Hermes with wings on his ankles had been found in 1758, the year Winckelmann first visited Portici. By the following year, the restored statue was on exhibit, and Winckelmann describes it as one of the best surviving antique bronze statues, and the best one in Portici. He reports that the figure was whole when it was found, except for the head, which he was told had been found "smashed into a hundred pieces."[13] He also notes that the caduceus is missing. The young Hermes was fully restored before being exhibited, and was published as if it had been found intact (fig. 3.6). Nothing more is reported about damages to the statue until 1948, when Amedeo Maiuri published a short article about new restorations that were needed after World War II. The head of the Hermes had broken off and shattered into approximately forty pieces, probably about the same number in which it had been found during the eighteenth century (fig. 3.7).[14]

As to the surface condition of ancient bronzes, Winckelmann notes that "most of the bronzes in the museum must have been subjected to fire during their restoration and repair, and they have thus lost their venerable ancient surface, which consists of a greenish outer layer, or patina in Italian. They [the restorers] have applied a similar color, which differs significantly from the ancient patina, and looks disgusting on some of the heads."[15] Winckelmann observes: "Even a little new soldering (to make repairs) cracks off the old surface, and it would be a mistake to leave the figures looking shabby. Therefore they are forced to imitate the ancient effect as best they can."[16] In other words, creating a uniform surface was the goal in restoration. Contrary to popular belief, bronzes that came out of the ground at both Pompeii and Herculaneum had essentially the same surface appearance, but after cleaning they were recolored—those from Herculaneum in brown to black, and those from Pompeii in green. It is difficult now to detect the repairs to the head of the seated Hermes: the hair and flesh are painted black; the lips and modern plaster eyes are painted red (fig. 3.8). Even today, if one buys a reproduction of an ancient statue from the Fonderia Chiurazzi in Naples, the choice of patina is "Pompeii" (green), "Herculaneum" (brown to black), and "Renaissance" (shiny bronze).[17]

FIGURE 3.8. Head of bronze seated Hermes, 1st century B.C.–1st century A.D., perhaps after a 4th-century B.C. type, restored in 1948. Restored H. (from chin to crown) about 20 cm (7⅞ in.). Naples, Museo Archeologico Nazionale (inv. 5625)

Subsequent Publications of the Royal Collections

Publishing the antiquities in the royal collections was important to Charles VII because of the publicity these finds generated for the Spanish Bourbons and the Kingdom of Naples and Sicily. The first attempt at publication, the *Disegni intagliati* of 1746, was titled inaccurately, soon outdated, and organized haphazardly. It contained illustrations of uneven quality and provided no information about measurements, medium, or discovery site. As the digs continued at Herculaneum, larger and more impressive sculptures and paintings were being unearthed, clearly far more deserving of publication than the small early finds. As it turned out, however, publishing this continuing stream of artifacts satisfactorily would consume far more time than preparing them for display. Many of the entries in future publications were lengthy, with extended footnotes, some of which ran to several pages. The seated bronze statue of Hermes discovered in 1758, for example, was given two pages of text and notes and four full-page plates.[18]

The Stamperia Reale, the royal publishing house, had been founded in Naples in 1750. It specialized in folio volumes, with the royal coat of arms stamped on leather covers or printed on the title page. In 1752 the prime minister Giovanni Fogliani's cousin Ottavio Antonio Bayardi (1694–1764) produced the Stamperia's first publication, the *Prodromo delle antichità d'Ercolano* (Preface to the antiquities of Herculaneum)—five volumes in which Bayardi told stories about Hercules, in an effort to prove that the city that had been found was Herculaneum—which of course had been known since the discovery of the inscription in 1738. His five volumes contained nothing about the antiquities.

In 1754 Bayardi published a one-volume *Catalogo degli antichi monumenti dissotterrati dalla discoperta città di Ercolano* (Catalogue of the ancient monuments unearthed in the discovered town of Herculaneum), which contained brief descriptions of more than two thousand objects. A typical entry for a painting has a summary account of the subject, and indicates the color of the background and the size of the work. Only when Bayardi catalogued a work that he thought was particularly fine did he write a description long enough to allow a reader to identify it with certainty. None of the entries was illustrated, with the result that the *Catalogo* defeated the purpose of presenting the spectacular and growing collection of Bourbon antiquities.

The *Antichità di Ercolano*

In 1755, King Charles appointed a new prime minister, Bernardo Tanucci (1698–1783), who put a stop to Bayardi's plans to publish the royal collection. Charles and Tanucci enlisted fifteen top scholars as members of the Reale Accademia Ercolanese di Archeologia. Their job was to study the finds as a committee and to publish the group's findings. Twenty-five leading artists of the day, including Giovanni Elia Morghen, Carlo Nolli, and Giovanni Battista Casanova, were hired to provide illustrations and engravings. Paderni, the museum's director, was himself an

occasional illustrator; one of his major contributions was his portrait of Charles on the frontispiece for all but the last volume of the *Antichità di Ercolano*.

Bayardi was kept on long enough to edit the first volume of the new series. Eight magnificent folio volumes were published between 1757 and 1792, five on paintings, two on bronzes, and one on lamps and candelabra. The marbles were never published. Prime Minister Tanucci was the driving force behind all eight volumes, chairing the Accademia Ercolanese and controlling both the print run (for volume one, 2,100 copies) and the distribution of the volumes to suitable recipients. (Tanucci also controlled the granting of permits for visitors to the museum at Portici.) The objects in these volumes are not only from Herculaneum, as the title suggests, but also from all the Bourbon excavations around the Bay of Naples.

FIGURE 3.9. Top left, bronze chariot attachment in the form of a horseman (Naples, Museo Archeologico Nazionale, inv. 5497), from the theater at Herculaneum, reported 1739. Drawing by Vincenzo Campana (Italian, ca. 1730–after 1806), engraving by Pietro Lorenzo Mangini. From *Delle antichità di Ercolano*, vol. 6 (Naples, 1771), p. 9

Depicting the Bronzes

In 1767 volume five of the *Antichità* appeared, on bronze busts, large and small, and in 1771, volume six was printed, on bronze statues and statuettes. Entries either show statuettes at their full size or provide scales in Neapolitan and Roman palms.[19] Most give general findspots, such as Città (Pompeii), Stabia, Resina, or Portici, the last two referring to different points of entry to ancient Herculaneum. Sometimes an entry specifies which tunnel was being dug when a sculpture was found. The illustrations show all the bronzes mounted for display in the Herculanense Museum, and all appear to be in perfect condition. Works that were not in good condition when they were found, such as the seated Hermes, had been repaired, and the repairs had been concealed; even empty eye sockets had been filled with colored plaster so as to look like bronze. The Hermes had been badly damaged, but what was ancient and what was modern restoration was not revealed. Although Nicola Vanni's illustration of the Hermes looks true to the overall appearance of the bronze, down to the stump of a caduceus in the left hand (see fig. 3.6), there is no hint that the head, the right arm, and the wings on the feet had been repaired or replaced, and that the statue had been seated on a modern rock. That was common practice. The problem of intrusive shadows in the *Disegni intagliati* had also been overcome. In the case of the Hermes, the rock casts a bit of shadow on the base, but the statue as a whole does not, except for a slender shadow down the right side of the body just behind the right arm.

A number of items that had been featured in the *Disegni intagliati* were redrawn and republished in the *Antichità di Ercolano*. Not all of them, however, warranted individual entries, and were used instead as anonymous headpieces or tailpieces, some more than once. The wide-eyed, smiling rider given a full page in the *Disegni intagliati* (see fig. 3.4) was illustrated as a headpiece in the *Antichità*. In Vincenzo Campana's new drawing, the horse was given a tail and the rider his right hand (fig. 3.9). Campana's illustration was also directed toward the realm of display.

FIGURE 3.10. Bronze statuette of a man with a sacrificial boar (Naples, Museo Archeologico Nazionale, inv. 5489), from Herculaneum(?). Engraving by Francesco Sesone (Italian, 1705–1770). From *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Naples, 1746), no. 36

FIGURE 3.11. Bronze statuette of a man with a sacrificial boar (Naples, Museo Archeologico Nazionale, inv. 5489), from Herculaneum(?). Drawing by Vincenzo Campana (Italian, ca. 1730–after 1806), engraving by Francesco Giomignani. From *Delle antichità di Ercolano*, vol. 5 (Naples, 1767), p. 63

The rider and his counterpart opposite rest not on an uneven ground of tufts of grass (as in the *Disegni intagliati*) but on a simple flat plane, upon which the horse casts a neat, minimal shadow.[20] Oddly, Campana, like Sesone before him, overlooked the faceplate of the helmet, giving the little horseman an actual face instead of a visor.

A sacrificial boar and a handler appeared in the *Disegni intagliati* with large, dark, irregular shadows behind them; they stand on an uneven ground line against a blank backdrop (fig. 3.10). When the two of them reappear as a headpiece in the *Antichità*, they are mounted on a neat rectangular base, indicating that they are a statuette group, and the dark, bulky shadows have been replaced by unobtrusive shading on the front of the base and a little shading on both the boar and the handler (fig. 3.11).[21] They are thus no longer meant to resemble living creatures; they are now presented as a display. The boar and its handler are among the finds that do not appear in today's catalogue of the Museo Archeologico Nazionale, and are not on display, although they have museum inventory numbers.

One notable exception to the practice of relegating small objects featured in the *Disegni intagliati* to secondary importance in the *Antichità* are the bronze tintinnabula. The longest of the ninety entries in the *Disegni intagliati* is one for a boy with a topknot wielding a knife against a biting dog, an "animale tondo," with three bells suspended from the boy.[22] It was no easy matter to describe formally a dwarf with bells suspended from his elbow, scrotum, and penis doing battle with his penis, whose head is that of a snarling dog (fig. 3.12). It was, however, a fascinating image, and this bronze tintinnabulum was among the first pornographic objects to be uncovered in the early excavations. Although the figure was not republished, a slightly different, dwarfish gladiator, hung with five bells, was given its own entry and two illustrations in the *Antichità*;[23] still another, a dwarflike Mercury riding a ram-headed penis hung with seven bells, appears in César Famin's *Le Cabinet secret du Musée royal de Naples* (The Gabinetto Segreto of the Royal Museum of Naples; 1857).[24] That one, or possibly another Mercury, had previously been part of Ferdinand IV's gift of Herculanean objects to Napoleon in 1802.[25] Tintinnabula have continued to arouse prurient interest, and it is no surprise that this one cannot now be located.

To judge from the brief notes written by Karl Weber, who excavated the Villa dei Papiri at Herculaneum, when bronze and marble heads were found, the diggers pulled them out, detaching them from the tops of their posts, which were made of brick plastered over to look like marble. The marble herm-heads evidently rested directly on top of these posts with no further attachment, allowing them to be pulled neatly out of the ground. If names had been painted on the plaster covering the brick posts, they were left behind. No one would have noticed names in the rush to get the ancient marble heads out of the ground. Today we still do not know whom most of these portraits represented.

FIGURE 3.12. Bronze tintinnabulum (Naples, Museo Archeologico Nazionale, inv. 27853), said to be from Resina, reported 1740. Engraving by Francesco Sesone (Italian, 1705–1770). From *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Naples, 1746), no. 18

FIGURE 3.13. Bronze bust of a young man, with eyes in painted plaster, find reported on April 10, 1754. 1st century B.C.–1st century A.D. (head and neck), 18th century (bust and eyes). H. (from chin to crown) 27 cm (10⅝ in.). Naples, Museo Archeologico Nazionale (inv. 5588)

FIGURE 3.14. Bronze herm-head of a "Polykeitan" athlete, found between May 22 and May 27, 1752. 1st century B.C.–1st century A.D., after a 5th-century B.C. type. H. (from chin to crown) 25 cm (9¾ in.). Naples, Museo Archeologico Nazionale (inv. 5610)

The bronze busts from the Villa dei Papiri must have been attached firmly to their mounts: most of them broke off at the neck when they were pulled from the ground. The eighteenth-century restorers who mounted them for display in the Herculanense Museum made new busts for those that needed them (fig. 3.13), all but one of them draped. The bust they often used as a model for these new busts wore a peplos and had been a female (see fig. 3.1), though no one realized that at the time. In fact, the few male busts that did not break off from the heads during their recovery are nude, not draped.

The urge to complete works and to make them appeal to a contemporary audience went beyond adding drapery to busts, to tilting the heads forward when mounting them, as was commonly done with modern portraits (fig. 3.14). When missing bone-and-stone eyes were restored, they were constituted of modern fill material to resemble bronze, and repairs were made not just for exhibition but also for publication (fig. 3.15).

Apart from missing eyes and busts and mounts, and the need for some reconstruction and repatinating, most of the bronzes from the eighteenth-century excavations were in good shape: many had simply been knocked down during the catastrophe of A.D. 79 and had been buried in soft mud. Because the temperature and humidity remained constant over the years, they were not badly broken and the surface did not heavily corrode. And yet the notes and comments that leaked out provided enough fuel for Winckelmann to accuse the director and the restorers at Portici of irresponsible handling of the ancient bronzes, reckless reconstitution of statuary, and destruction of fragmentary bronzes. These charges, largely accurate, made for good stories, but they were soon forgotten. Modern scholars, too, have considered the reconstructed appearances of these ancient bronzes over their actual condition. Some of the more common misconceptions are that Greek bronzes had inset eyes, whereas Roman bronzes had bronze eyes; that the Pompeian patina is green, the Herculanean patina brown. These and other longstanding notions are being reexamined and corrected now that objective autopsy and analysis are being used to check the validity of scholarly traditions.

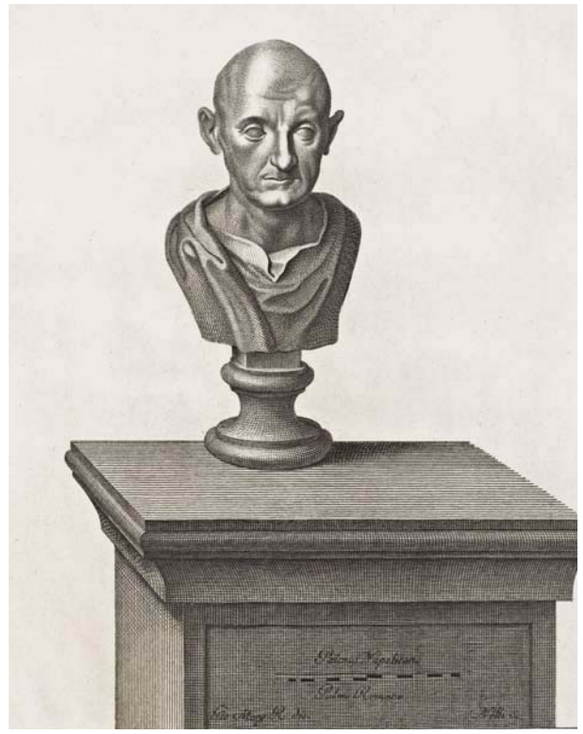

FIGURE 3.15. Bronze head of a man, so-called Scipio Africanus (Naples, Museo Archeologico Nazionale, inv. 5634), from the Villa dei Papiri at Herculaneum, reported 1752. Drawing by Giovanni Elia Morghen (Italian, 1717 or 1721–1807), engraving by Carlo Nolli (Italian, 1710–ca. 1785). From *Delle antichità di Ercolano*, vol. 5 (Naples, 1767), p. 141, pl. 39

1 See J. Daehner, ed., *The Herculaneum Women: History, Context, Identities* (Los Angeles, 2007).

2 On the history and development of the Real Museo Borbonico, see Andrea Milanese in this volume.

3 Translation by the author. See L. A. Scatozza Höricht, "Restauri alle collezioni del Museo Ercolanese di Portici alla luce di documenti inediti," *Atti della Accademia Pontaniana*, n.s., 31 (1982), pp. 495–540.

4 See C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005), pp. 222–23.

5 Naples, Museo Archeologico Nazionale, inv. 5598. See *Monumenti antichi rinvenuti ne reali scavi di Ercolano e Pompej e delineati e spiegati da d. Camillo Paderni romano*, ed. and transcribed by Ulrico Pannuti (Naples, 2000), pl. IV top; Mattusch, *Villa dei Papiri* (note 4), pp. 230–33.

6 The three copies of the *Disegni intagliati* that are currently known are in the Royal Library, Madrid; the Victoria and Albert Museum, London; and the Metropolitan Museum of Art, New York. See D. Burlot, "The *Disegni intagliati*: A Forgotten Book Illustrating the First Discoveries at Herculaneum," *Journal of the History of Collections* 23, no. 1 (2011), pp. 15–28; P. Vazquez-Gestal, "Displaying Art in Eighteenth-Century Naples," in *Collecting and Dynastic Ambition*, ed. S. Bracken, A. M. Gáldy, and A. Turpin (Newcastle upon Tyne, 2009), pp. 104–5.

7 *Disegni intagliati in rame di pitture antiche ritrovate nelle scavazioni di Resina* (Naples, 1746), no. 35: bronze attachment from chariot; Naples, Museo Archeologico Nazionale, inv. 5497.

8 Burlot, "*Disegni*" (note 6), pp. 15–16.

9 *Disegni intagliati* (note 7), no. 1; *Delle antichità di Ercolano*, vol. 6 (Naples, 1771), pl. XX; now Paris, Musée du Louvre, inv. Br 32, H. 62 cm (24⅜ in.). See M. Denoyelle and S. Descamps-Lequime, *The Eye of Josephine: The Antiquities Collection of the Empress in the Musée du Louvre*, with the collaboration of M. Étienne, exh. cat. (Atlanta: High Museum of Art, 2007), pp. 90–92, no. 26.

10 *Le collezioni del Museo Nazionale di Napoli*, ed. E. Pozzi et al., 2 vols. (Rome, 1989).

11 J. J. Winckelmann, *"Letter" and "Report" on the Discoveries at Herculaneum: Antiquities, Archaeology, and Politics in Eighteenth-Century Naples*, trans. C. C. Mattusch (Los Angeles, 2011), pp. 78–79.

12 Winckelmann, *"Letter" and "Report"* (note 11), p. 76.

13 Winckelmann, *"Letter" and "Report"* (note 11), p. 97. Winckelmann acknowledges that "a hundred" should not be taken literally.

14 A. Maiuri, "Restauri di sculture in bronzo," *Bollettino d'arte* 1 (1948), pp. 181–83; Mattusch, *Villa dei Papiri* (note 4), pp. 216–21.

15 Winckelmann, *"Letter" and "Report"* (note 11), p. 97.

16 Winckelmann, *"Letter" and "Report"* (note 11), p. 97.

17 On the Fonderia Chiurazzi, see Luisa Fucito in this volume.

18 *Antichità di Ercolano*, vol. 6 (note 9), pp. 113–14, pls. XXIX–XXXII.

19 The Neapolitan palm was 26.5 cm (10½ in.) in length, the Roman palm 23.3 cm (9⅛ in.).

20 *Antichità di Ercolano*, vol. 6 (note 9), p. 9, facing appliqué of another horseman in headpiece to pl. 3.

21 *Disegni intagliati* (note 7), no. 36; *Delle antichità di Ercolano,* vol. 5 (Naples, 1767), p. 63, frontis. to pls. 15, 16; Naples, Museo Archeologico Nazionale, inv. 5489.

22 *Disegni intagliati* (note 7), no. 18.

23 *Antichità di Ercolano*, vol. 6 (note 9), p. 387, pl. 95; Naples, Museo Archeologico Nazionale, inv. 27853.

24 C. Famin, *Le Cabinet secret du Musée royal de Naples: Peintures, bronzes et statues érotiques* (1857; repr., Paris, 1995), pl. 23.

25 Denoyelle and Descamps-Lequime, *Eye of Josephine* (note 9), p. 204, no. 126. Compare also the tintinnabulum, Naples, Museo Archeologico Nazionale, inv. 1098; P. Nitti et al., eds., *Pompéi: Un art de vivre*, exh. cat. (Paris: Musée Maillol, 2011), p. 184, no. 164.

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4 | The Restoration History of the Bronze Apollo and Diana from Pompeii

Erik Risser and David Saunders

Introduction

The conservation of the Apollo Saettante (fig. 4.1) at the J. Paul Getty Museum in 2009 and 2010 provided the first occasion to understand the restoration history of this statue, which had undergone extensive interventions and alterations following its recovery in 1817 and 1818.[1] The inclusion of its sister statue, the bronze Diana (fig. 4.2),[2] in the exhibition *Apollo from Pompeii: Investigating an Ancient Bronze* (2011) presented the opportunity to undertake a parallel study.[3] This brought to light many points of similarity and difference between the two statues, and offers the basis to explore the practical and ethical issues associated with the restoration of archaeological finds in early-nineteenth-century Naples.

FIGURE 4.1. Apollo Saettante, 100 B.C.–before A.D. 79. Bronze, 147 × 55 × 114 cm (57⅞ × 21⅝ × 44⅞ in.). Naples, Museo Archeologico Nazionale (inv. 5629). The statue is shown after conservation at the J. Paul Getty Museum.

Discovery

The discovery of the Apollo and Diana has recently been well documented by Mario Grimaldi,[4] so only the salient points will be noted here. The Diana was found in March 1817, in what is now identified as the Temple of Apollo. It was discovered, in the words of the excavators' reports, as "a half bust of bronze," with the eyes intact but missing "a portion of the left arm and the ring finger of the right hand."[5] Two and a half months later, the main fragments of the Apollo—"a most beautiful bronze statue"—were discovered; the figure was broken in three sections and was missing its right foot, an arm, and a hand.[6] A variety of topographical clues in the reports led Grimaldi to locate the discovery of the Apollo just northwest of the Forum, and he suggests that it could have been in the buildings that are today known as the *aerarium*.

Despite continued excavations in this area, it was not until over a year later that the missing parts of the statue were found, and then apparently by accident. The reports in volumes 1 and 3 of *Pompeianarum Antiquitatum Historia* (hereafter *PAH*) conflict on certain details, but the basics are consistent.[7] Two soldiers (or a hunter, according to volume 3 of *PAH*) were out strolling along the northern city walls. Seeing a fox, they gave chase, only for it to slip away. In doing so, however, the fox led them underground, whereupon they came across bronze fragments—a right foot, a right hand, and a fragment of an arm accompanied by some drapery.[8] These pieces were

FIGURE 4.2. Diana, 100 B.C.–before A.D. 79. Bronze, 54 × 45 × 48 cm (21¼ × 17⅝ × 18⅞ in.). Naples, Museo Archeologico Nazionale (inv. 4895)

FIGURE 4.3. Unknown artist. Engraving from Raffaele Gargiulo, *Raccolta de monumenti più interessanti del Re. Museo Borbonico e di varie collezioni private* (Naples, 1825), pl. 10. Los Angeles, The Getty Research Institute

FIGURE 4.4. Schematic depiction of fragments of the Apollo Saettante

demonstrated as joining to the Apollo—in spite of initial disbelief from some quarters, given the location of this discovery and the delicate, feminine form of the finds—leaving only the figure's left hand missing. Days later, the report in volume 1 of *PAH*, for October 23, 1818, records the discovery of this hand in a store deposit of material that had already been unearthed,[9] and it was sent to the Real Museo Borbonico in Naples on the very morning it was identified.

In studying the Apollo during its conservation at the Getty Museum, we have verified the excavators' accounts of the fragmentary nature of the statue and its missing parts. To our knowledge there are no records pertaining to the reconstruction of the Apollo, which was presumably executed by the staff of the Real Museo Borbonico (discussed further below), but museum inventories and catalogues give evidence for when the work was completed. The statue is recorded in the museum's *Inventario Arditi* of 1819 as being on display,[10] and was published as such in Gélas's catalogue of bronzes of 1820 (where the entry briefly recounts the story of the statue's discovery, and states that it was "very well restored").[11] The earliest illustration (fig. 4.3) occurs in Raffaele Gargiulo's *Raccolta de monumenti più interessanti del Re. Museo Borbonico* . . . , published in 1825, and shows the figure to be flawless, lacking only the bow.[12]

Apollo Saettante: Reassembly and Reconstruction, First Phase (ca. 1817–1820)

Given its state on recovery, the Apollo required an extensive intervention to reunite the fragments and produce a displayable statue. As noted above, the physical evidence coincides well with literary sources that describe the excavations. The Apollo was reconstructed from seven primary pieces (fig. 4.4): the torso (including the head and right arm), part of the left arm with drapery, the remainder of the left arm, the right hand, the left leg, the right leg, and the right foot. The damage to the head demonstrates the strength of the forces that broke the statue; there are multiple fissures throughout the hair and large cracks running along the right side of the neck (fig. 4.5). The overall damage appears to have been most severe on the left side, where the bicep and midthigh were fractured into numerous small fragments, many of which were not recovered. By contrast, the right side was in much better condition, with the hand and foot separating at their ancient joins and the right leg fracturing along the transitional line between the leg and the lower torso.

The fragments were reassembled around a single square-sectioned length of wrought iron that travels vertically through the entire figure (fig. 4.6). The rod is connected to the left leg at the midthigh, in the lower back, and at the left side of the neck. Iron straps straddle the armature at these three points, and they are fixed to the ancient bronze with brass screws. The curvature of the iron bar follows the interior shape of the sculpture, indicating that it was not inserted into the reassembled figure; rather, the fragments were assembled sequentially around it. The iron bar

FIGURE 4.5. Apollo: digital rendering of cracks

FIGURE 4.6. Apollo: digital rendering of internal armature, and straps and screws.

FIGURE 4.7. Apollo: digital rendering of straps and screws

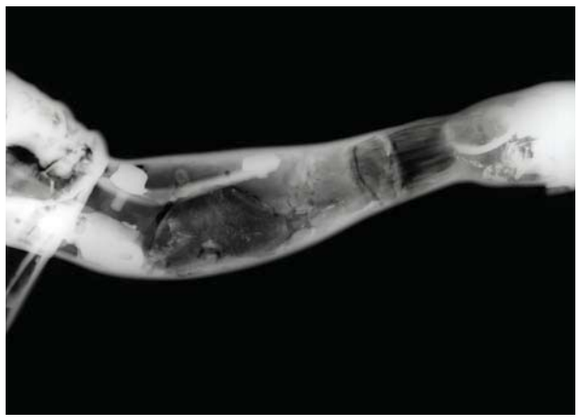

FIGURE 4.8. Apollo: detail, X-ray of straps in left arm

also has a threaded end, and so was intended to be the primary structural support for the display of the statue.

The individual joins between the seven principal fragments were secured with forged-iron straps (fig. 4.7). At each break, these flat straps were positioned perpendicular to the join and secured mechanically. They were initially fixed with lead solder to the interior of one side of the join, then drilled and threaded and secured with a brass screw. By fixing one end of an iron strap to a fragment, its adjoining piece could be positioned and its relation to the strap established. This second fragment was then drilled through its point of contact with the iron strap and another brass screw inserted, securing the two bronze parts to each other via the internal strap. Such a method was highly practical, permitting the spatial relationships of the fragments to be determined, while also allowing for the straps to be adjusted to the interior contours of the joins.

In areas of extensive damage, where multiple small fragments constituted the connection between two more fully preserved sections, the iron straps are more numerous and bypass the fragmentary area to connect the two larger portions of the sculpture directly. This can be seen in the left arm, where the fragments that make up the bicep have been soldered in place, while the shoulder and forearm are connected by three straps at approximately 120 degrees from one another (fig. 4.8). A similar construction is present in the left thigh.

In all instances the final stage was to solder the exterior break edges together to create a seamless transition from one fragment to another. Notably, the right hand and right foot were merely rejoined with solder, without recourse to internal iron straps. This demonstrates that internal reinforcements were used by the restorers only where necessary, and that a clear distinction was made between weight-bearing and non-weight-bearing elements of the sculpture.

The varying orientations of the brass screws (fig. 4.9) that were used in the reassembly—some with their heads outward, others inward—allows us to propose a probable sequence of reconstruction. The first step appears to have been the creation of a point to access the interior of the upper torso. This was achieved by opening up the ancient join at the crown of the head (which had been only partially fusion welded), which allowed the restorers to secure the internal armature as well as the individual reinforcements for the cracks in the neck.

The left arm and right leg seem to have been the first fragments to have been joined to the torso, since the screw heads at these points were secured from within. Beginning reassembly by reattaching these fragments makes sense, considering that neither was associated with the structural armature. Indeed, it would have been difficult to secure their reinforcement straps from inside with the armature in place. Furthermore, by securing the right leg, it would also have been possible to calculate the height of the figure, which would have helped in determining the length necessary for the iron armature (fig. 4.10).

FIGURE 4.9. Apollo: detail of screw heads and ends in thigh

FIGURE 4.10. Apollo: digital rendering of internal armature, and straps and screws. This image also shows the later repair to the right ankle, as shown in figure 4.20.

FIGURE 4.11. Apollo: detail of break edges at underside of left arm

FIGURE 4.12. Apollo: detail of left thigh, with nineteenth-century restoration patch removed during conservation to show break edges

Thereafter, following the insertion of the two straps in the neck and the screws securing the pubic area, three straps were introduced in the left leg. All three were soldered in the upper portion of the join, then drilled and bolted in place to receive the leg. It was at this stage, before the leg was secured in place, that the armature would have been introduced, as is suggested by the nature of its attachment in the middle of the left leg below the break join. Here, a cross brace was affixed to either side of the leg with screws secured from the exterior. The armature passes in front of the brace and contacts its surface, where a strap straddles and secures it. Since the brace is in the detached portion of the leg, its orientation and position could have been determined only after the position of the leg had been decided, requiring that the armature and all three flat straps were already fixed in place.

In most instances the break joins matched well to one another. In a few cases, however, the restorers filed, cut, and reshaped irregular break edges in order to fit pieces together. This is clearly seen on the underside of the upper left arm, where the quantity of small fragments appears to have been a hindrance to proper realignment and rejoining (fig. 4.11). Similarly, the edges at the front of the join in the left leg were likely distorted during fracture, and these areas were cut back for the insertion of brass patches that created a smoother transition from one side of a join to the other. As is evident with a large portion of the left thigh (fig. 4.12), when dealing with missing areas, the restorers simplified edges so as to be able to incorporate large brass patches to complete the form.

There is no record that the original hanging ends of the Apollo's drapery were ever found. However, the descriptions of the statue in the *Inventario Arditi* and Gélas's catalogue record that there was drapery around the back and over the arms, and this is consistent with a number of nineteenth-century illustrations of the restored figure that show the drapery to be complete (see fig. 4.3; figs. 4.13, 4.14).[13] Evidently, therefore, the drapery ends were reconstructed as part of this first phase of restoration. Museum inventories of 1844 and 1849 explicitly record that these new drapery ends were made of plaster.[14] During conservation at the Getty Museum, the threaded drill holes in the arms that were used to attach these new parts were revealed, and as is fitting given the other techniques employed in reassembling the figure, they were evidently attached by means of screws.

Apollo Saettante: Surface Treatment

Upon arrival at the Getty Villa in 2009, the exterior of the Apollo varied between areas of exposed reddish-brown copper alloy and relatively smooth sections of mottled black and dark green. Endoscopic examination of the interior, however, revealed large irregular patches of cuprite, malachite, and azurite (fig. 4.15). All three corrosion products are typical of, and

FIGURE 4.13. Unknown artist. Engraving from *Real Museo Borbonico* (Naples, 1832), vol. 8, pl. 60. Los Angeles, The Getty Research Institute

FIGURE 4.14. After Ferdinando Mori (Italian, 1782–1852). Engraving from Domenico Monaco, *Les monuments du Musée national de Naples…* (Naples, 1884), pl. 91. Los Angeles, The Getty Research Institute

FIGURE 4.15. Apollo: detail, endoscope photo to show interior corrosion

FIGURE 4.16. Apollo: detail of traces of rasps on surface

consistent for, an ancient bronze and should indicate what the statue would have looked like at the time of recovery. Their complete absence on the exterior indicates a major intervention—and numerous traces of chisels, rasps, and files on the Apollo's surface plainly demonstrate that the statue was cleaned mechanically (fig. 4.16). Since the natural corrosion products remain on the interior, any acids or chemical agents that might have been used in the cleaning were evidently not applied universally. Indeed, although the possibility that chemicals were employed for cleaning cannot be excluded outright, no traces of their use have been documented.

The ancient metal is far from fully mineralized, and areas of exposed bronze would most likely have been a bright raw-copper color after cleaning. After the Apollo Saettante had been reassembled, therefore, it would have had a highly irregular and patchy coloration, varying between the bright raw metal and dark areas of corrosion. Furthermore, there would have been many traces of the restorers' work: irregular silvery solder lines, tens of shiny brass screw heads, and several prominent and smooth brass patches. Clearly, therefore, the greenish color of the statue that is evident today was the result of the application of a new patina, which served both to disguise the evidence of intervention and to achieve a homogenous and even tonal quality (fig. 4.17). Very little of the original corroded surface has survived; there are only trace amounts of cuprite and remnants of malachite in deep sculptural recesses. Instead, what is visible is a highly painted surface made up of multiple pigments and various binding media. The Apollo's exterior surface is therefore a nineteenth-century conception of what an ancient surface should look like.

Samples taken from representative portions of the sculpture contained varying amounts of natural and synthetic yellow and blue pigments: iron oxide, potassium ferrocyanide, azurite, and lead chromate. The synthetic pigments, in particular Prussian blue and chrome yellow, were in circulation at the time of the Apollo's discovery and so are appropriate to the proposed dates for its initial restoration. Individually, whether natural or synthetic, these pigments offer varying intensities of yellow and blue. By mixing them together, various shades of green can be obtained, ranging from brilliant to dark, almost black. The individual pigments themselves may also be lighter or darker and give colors and saturation that can vary from orange to reddish to black. The multitude of possible colors and tones is consistent with what one would expect on an ancient bronze, making the application of pigments a highly effective technique for repatination.

Further analysis showed the presence of three organic materials on the surface, all of which are common binder types. All samples taken contained a drying oil. The ratio of palmitic to stearic acids present suggests linseed or walnut oil, or a combination of the two. These drying oils were the principal binder used to apply the pigments to the surface. Some of the samples removed from seams, particularly those of the drapery around the back and at the arms,

FIGURE 4.17. Apollo: detail of patinated surface

FIGURE 4.18. Apollo: detail of face showing areas of reddish-brown color

contained rosin in the form of a coniferous exudate, most likely colophony. Where employed, the rosin appears to have been used more as an adhesive mastic or grouting substance to fill larger voids. A few samples—from the right foot and the areas around the attachment of the two hanging drapery fragments—contained proteins that indicate the presence of animal glue. As will be discussed below, these are areas that were treated during a later intervention.

The application of pigments as a method of patination has a clear logic, especially considering the extreme color and textural variations that would most likely have presented themselves on the cleaned and reassembled statue. Aesthetically, pigments would have covered and disguised the new elements and areas of overcleaning or greatest variation. Practically, the greater controllability of the technique—as compared to chemical methods—in both its application and the predictability of results would also have been a benefit, as were the easy availability and relative low cost of the materials involved.

There is, nonetheless, a distinct possibility that another method of patination was also used. The face, chest, and front of the thighs are a reddish brown (fig. 4.18). The absence of corrosion in these areas is most likely due to its complete removal during cleaning (rather than to preferential or uneven corrosion in the burial environment). Their color, however, cannot be attributed simply to the application of pigments. Rather, it may have been achieved through the heating or flaming of the bronze surface, to force its oxidation prior to the addition of any natural or synthetic colors.

Although this technique cannot be demonstrated scientifically, it may be hypothesized by contrasting the reddish-brown color on areas of the face, chest, and thighs with the golden-yellow color around the fracture at the right ankle, which was visible when the Apollo arrived at the Getty Villa in 2009 (fig. 4.19). As will be discussed below, this was part of an intervention in the 1860s. What is of interest here is that the color of the bare metal had been exposed by filing and rasping, and had remained unchanged ever since that intervention took place some 150 years ago. As noted above, the face, chest, and front of the thighs had been cleaned of their corrosion products around 40 years earlier. Yet their appearing not golden but reddish brown is difficult to attribute simply to natural surface oxidation during this period. The discrepancy suggests that these areas underwent another type of treatment. Acids can be excluded, given the absence of any trace of metal salts such as chorides, nitrates, or sulfates. Heating, however, should result in the formation of superficial cuprite, and cuprite is indeed present in many of the samples, particularly those taken from the reddish-brown areas. The coloring of these areas could therefore have been the result of flaming or torching.

FIGURE 4.19. Apollo: detail of right ankle fracture, showing golden yellow color of exposed metal

Apollo Saettante: Second Intervention (ca. 1860)

Having outlined the various aspects of the statue's first phase of restoration, we turn to a second phase of intervention that was undertaken at a later date, most probably in the early 1860s. As noted above, the right ankle underwent an additional phase of repair. This is documented by a note in the archive of the Naples museum dated January 5, 1861, wherein the museum's head of restoration, Raffaele Gargiulo, recorded that the right ankle of the Apollo was detached at the site of the earlier repair.[15] Solder had been used for this, and evidently had proved insufficient some forty years later. To reinforce the join, a commercial brass sheet was rolled up and wedged into the interior cavity of the ankle with shims and plaster (fig. 4.20). This is a marked change in approach from the previous repair, and also a departure from the use of iron straps. Furthermore, the treatment of the surface to reinstate the solder was drastically different from what had been done previously. As noted above, the surface was roughly filed and rasped to expose bare metal in order to increase the efficacy of the solder.

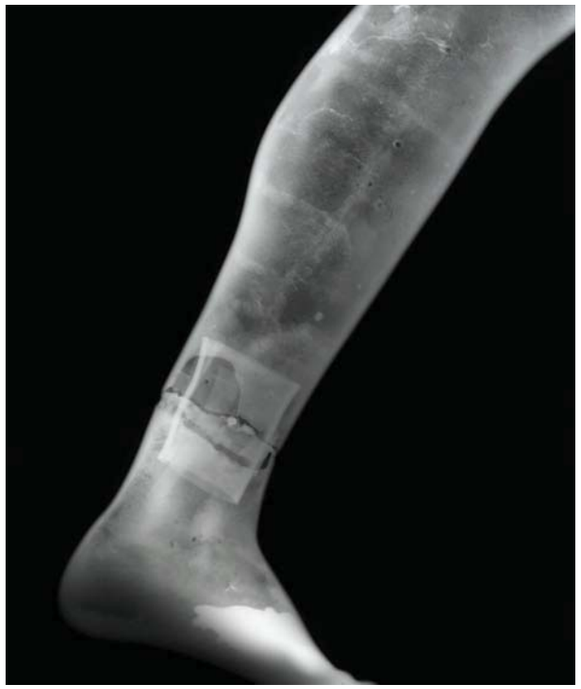

FIGURE 4.20. Apollo: X-ray of right ankle, showing brass insertion

The other important facet of the second intervention was the replacement of the plaster drapery ends (and the big toe on the right foot) with bronze parts. Early archival drawings (see figs. 4.3, 4.13, 4.14) show the Apollo with drapery ends intact, but these differed substantially in form and detail from the bronze parts that were attached to the statue when it arrived in Los Angeles in 2009 (figs. 4.21a–b). Further study corroborated these visual differences. First of all,

FIGURES 4.21a–b. Apollo prior to conservation at the Getty Museum, showing the bronze drapery ends

FIGURE 4.22. Apollo: detail of left arm with holes for screws

the chemical composition of the bronze drapery ends was distinct both from the ancient bronze alloy and from all the other materials employed in the first restoration. The drapery ends were also technologically dissimilar from the rest of the statue: both were sand-cast in several parts and welded together. In addition, the joins for the two drapery fragments were much more poorly matched than other repairs on the figure, and solder appeared to be used more as a transitional material for incongruities between the two sides of the join. Finally, when the bronze drapery ends were removed, a discrepancy was revealed in the number of drill holes in the arms versus the number of screws in the drapery, clearly illustrating the later addition of these drapery ends in place of the earlier plaster reconstructions (fig. 4.22).

In the absence of archival documentation, the motivation for the change from plaster to bronze can only be speculated upon—damage, a shift in taste, or a desire to use a material more closely related to the ancient. Notably, the number of folds on the latex nineteenth-century additions does not match with what survives of the ancient drapery. Their juxtaposition is so awkward as to suggest that the nineteenth-century bronze drapery ends were not created specifically for the Apollo, and may have been from—or intended for—another sculpture (which might suggest that necessity—that is, damage—was the impetus for the substitution). We can at least provide a terminus post quem and a terminus ante quem for the change. The latest inventory to record plaster drapery dates from 1849; the earliest photograph to show the Apollo with the bronze drapery is Robert Rive's, datable to 1864 or 1865.[16] The substitution may well have happened at the same time as the repair of the right ankle (ca. 1861).

FIGURE 4.23. Diana: X-radiograph

Diana: Restoration and Surface Treatment

The restoration history of the Diana (see fig. 4.2), which was recovered in 1817 just before the Apollo, is in some respects much simpler, in others more complex. The statue seems to have been discovered as a single fragment, and so required a much less extensive intervention than the Apollo. There is, for example, little to note regarding gap filling and joining, and X-radiography (fig. 4.23) has revealed no internal structural armature or individual metallic reinforcements. The only exception is the join between the crown of the head and the head itself, where much of the seam has been filled with a coniferous exudate, most likely colophony. Curiously, the ancient join does not appear to have separated—there is no sign of any disruption in the interior corrosion at the front of the head. Perhaps it had been distorted or the seam was felt to be more aesthetically pleasing when filled.

The cleaning of the Diana following its discovery appears to be similar to that performed on the Apollo. Endoscopic examination reveals interior corrosion very similar to that seen on the Apollo, with vibrant blues and greens in the form of azurite and malachite (fig. 4.24) as well as

FIGURE 4.24. Diana: endoscope photo of interior

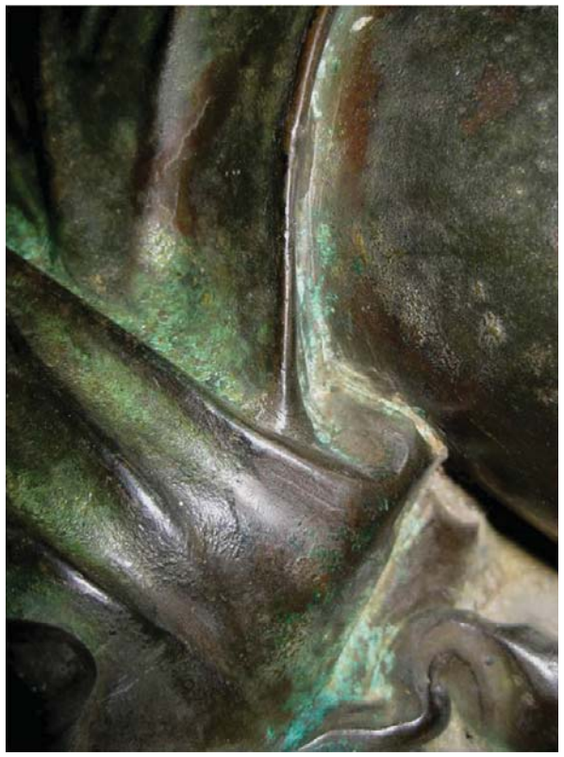

FIGURE 4.25. Diana: detail showing rasp marks and traces of corrosion

reds (cuprite). And as was true for the Apollo, these are largely absent from the exterior surface. Physical traces of rasps and files are still visible in recesses and hard-to-reach areas of the sculpture, suggesting a mechanical cleaning similar to the Apollo's. The continued presence of residual amounts of corrosion products deep in the folds of the drapery (fig. 4.25) suggests that acids or chemicals were not used, as they would most likely have removed or altered these in some way.

The extent to which the Diana was repatinated after cleaning is less clear. Analysis has identified the presence of azurite and malachite, mars yellow, mars red, carbon black, ultramarine, and thalocyanine green. These pigments are variously present in samples taken from representative areas of the figure, but are most highly concentrated toward the lower extremities. They are applied in ways similar to those used on the Apollo, insofar as—in combination or individually—the colors created a palette that was consistent with the appearance of natural corrosion products. However, whereas the pigments on the Apollo were a mixture of natural and synthetic, on the Diana they are mainly synthetic. Furthermore, many of them postdate the early nineteenth century, which suggests that they may be evidence for a much later intervention or repristination of the exterior surface—perhaps related to the transfer of the figure to its current marble plinth.

Of the natural pigments that have been identified on the Diana, azurite and malachite could be natural corrosion products that remained after the initial cleaning. Alternatively, they may have been reapplied in an attempt to tone the surface of the sculpture. Any conclusion depends on the degree to which the Diana required repatination after cleaning. Since there was no need for an internal armature, reinforcements, solder seams, or restoration patches, there are unlikely to have been any areas of new, raw, or otherwise differently colored metal. In sum, it seems likely that the Diana would have required a much less extensive overpainting than the Apollo to make it presentable.

Interpretation and Discussion

The restorations of the Apollo and Diana have a number of aspects in common, which is to be expected, given their near-contemporary discovery and the likelihood that they were worked on in a similar context. There are also significant differences, many of which are to be associated with their different states on recovery. Compared to the Diana, the highly fragmentary—but more complete—Apollo necessitated an extensive structural intervention, which also had significant implications as to the extent of repatination. These variations are a valuable reminder that many aspects of restoration work were done on a case-by-case basis, and it is difficult to identify a single methodological approach. However, both the similarities and differences can be more fully appreciated by situating them within a broader historical context. Recent scholarship has furnished

valuable information regarding the repairs that were made to ancient bronzes during the eighteenth century at the Royal Foundry at Portici, and consideration of this background (as well as restorations of other antiquities in the early nineteenth century) sheds valuable light on the cultural environment that influenced the decisions involved in restoring the Diana and Apollo.[17] We focus here on three categories: the methods and techniques of repair; the methods and techniques of repatination; and the choices as to what was restored and what was left fragmentary.

Given the greater degree of intervention, the Apollo is obviously more informative. The first feature to note is the method of patching lacunae. As discussed, the broken edges of the ancient metal were filed down and the gaps filled with brass sheeting that had been cut and shaped to fit (see fig. 4.12). These new patches were fixed in place by solder, and subsequently rendered invisible by the repatination of the whole statue. The approach is akin to the standard practice for similar repairs to bronzes from Herculaneum in the eighteenth century, but there are key differences in technique and material. In the Royal Foundry, gaps were filled by casting new fragments in bronze or brass in situ, on the figure. These were then secured by drilling holes through both the new and the ancient metal, and inserting screws. The method used for the Apollo is clearly simpler and more economical, and arguably demanded a less specific set of skills.

Another curiosity is the re-creation of the Apollo's missing parts. Aside from the lacunae noted above, the statue was largely complete by the time its extremities were found in 1818. The only substantial pieces that were never recovered were the ends of the drapery and the big toe on the right foot. Rather than being fabricated in metal, these were initially fashioned in plaster. Study of the large bronzes found at Herculaneum in the eighteenth century indicates that plaster was occasionally used in restoration work, but mainly for filling (particularly the eyes). More substantial reconstructions were done directly in bronze. Like the use of brass sheeting for the patches, the use of plaster suggests—at the very least—a simpler and more practical methodology.

Furthermore, although it is not entirely surprising that the Apollo's bow and quiver were never reconstructed, it is noteworthy that its eyes appear never to have been restored. In the eighteenth century, the missing eyes of bronze statues were almost always restored in some way. Some restorations were effected with little detail and presented a relatively blank expression, so it is conceivable that the Apollo's appearance may not have been too disconcerting. However, given that the Diana's ancient eyes were preserved—and the two statues were recognized as a pair from an early stage—the decision not to restore the Apollo's eyes seems significant. The Diana provides an even more compelling instance of restraint. The statue was displayed essentially as a bust (fig. 4.26), and nothing appears to have been done to restore the left arm or even the missing finger on the right hand. This is in sharp contrast, for example, to the statue of Agrippina Minor from Herculaneum, which received extensive additions to complete its right arm and much of

FIGURE 4.26. Diana: frontal view

the drapery around the shoulder, chest, and head, or the Sleeping Satyr from the Villa dei Papiri, with its shattered torso and missing right arm.[18]

Finally, consider the surface treatment of both Apollo and Diana. To clean and repatinate bronzes was, for all the criticisms that it received, well established and conventional in the eighteenth century. To do so, the Neapolitan restorers regularly used a paste composed of plaster and filings of natural corrosion products that had been collected during cleaning.[19] This use of an applied patina is consistent with evidence from the Apollo statue, less so with findings about the Diana. In both cases, however, synthetic pigments and binding agents have also been identified. No record of the use of these materials—which seem more at home on a painter's palette than in a bronze workshop—in earlier bronze restorations at Naples has yet been uncovered. Their presence on the Apollo and Diana suggests a different approach to a standard practice.

In sum, when compared to restorations undertaken in the Royal Foundry in the eighteenth century, the Apollo and Diana reveal both the broad continuation of a tradition and also significant changes in methods and materials. We have yet to find receipts or other archival documentation relating to the restoration of these bronzes, but a number of practical and historical contexts can assist in interpretation. Apollo and Diana were the first major bronzes to be discovered at Pompeii, and perhaps kindled the prospect of a trove of bronzes similar to that which had previously been found at Herculaneum. Their emergence was well timed politically, too, coming shortly after King Ferdinand IV's return from exile in 1815. The excavation reports reveal a desire for the king to be informed of the discoveries;[20] indeed, both statues would have been perfect additions to the recently renamed Real Museo Borbonico, where patinated plaster copies had substituted for bronzes from the royal collection that were absent from Naples during the king's exile.[21] Therefore, efficiency, practicality, and the availability of resources are all factors that may have dictated the methods used and decisions taken in cleaning and restoring the Apollo and Diana.

The specifics of activity at the museum may be another factor. During the early nineteenth century, extensive reorganization was ongoing at the Real Museo Borbonico.[22] For our purposes, it is sufficient to note only the museum's workshop for bronze restorations. Repairs to ancient bronzes had previously been undertaken at the Royal Foundry at Portici, but by 1807 this work appears to have been brought inside the museum at Naples.[23] The principal restorer of bronzes was Carlo Ceci (1723–ca. 1812), who was succeeded by his son Giacomo (1774–1816). Both had previously worked on the bronze restorations at Portici, and their activity in the new museum indicates that there was a continuation of the established tradition. When Giacomo died, he was succeeded by Raffaele Trapani (ca. 1700–after 1854), who is reported to have learned all Ceci's skills. However, Raffaele Gargiulo (1785–after 1870) was appointed to oversee Trapani's work.

Gargiulo is most famous for his work on ceramics, but was no less adept with metals: he won a medal in 1834 for his reproduction of a bronze tripod, and also seems to have been known for his own patina formula.[24] The discovery of Diana and Apollo in 1817 and 1818 coincides with the time at which he was appointed to oversee bronze restorations, these two bronzes may well have been among his first major projects (and it bears noting that the Apollo was illustrated in his *Raccolta de monumenti*, as mentioned earlier). Any differences from previous approaches—perhaps most obviously the materials used for repatination—may be attributable to this change in personnel.

Finally, the broader history of restoration practice should be considered. Orietta Rossi Pinelli, among others, has demonstrated that the late eighteenth and early nineteenth centuries should be seen as a critical period in the history of restoration of ancient sculpture, and in particular has focused attention on two key events involving the sculptor Antonio Canova.[25] The first occurred in 1803, when he famously declined the opportunity to restore the sculptures from the Parthenon. He kept to this opinion when he saw them in London in 1815. Displayed without modern intervention, the fragmentary marbles had a major impact in artistic and erudite circles. Their display seems to have played a role in the second key episode. After Canova had returned to Rome, in 1816, new regulations for acquisition by the Vatican museums were drawn up, and the basic criterion was the extent of restorations: "Only those monuments that are preserved unaltered in their original, ancient form, without restoration, will be bought."[26] Notably, Canova's studio also issued a legal proposal requiring that any sculptor obtain official authorization before he embarked on a restoration. This was posted throughout Rome and subsequently enshrined in law in 1820.[27]

Contemporary concerns about restorations were no less potent in Naples, and recent scholarship has done much to highlight the critical reactions that were generated by the repairs—and more—made to ancient vases during these years.[28] A ceramic loutrophoros whose conservation is the subject of a collaborative project between the Getty Museum and the Antikensammlung in Berlin is emblematic.[29] It was almost certainly restored in Naples in the early nineteenth century and illustrates the extent and quality of contemporary vase restorations. The words of James Millingen, published in 1813, are worth quoting in full: "Several artists, especially at Naples, have brought the art of vase restoration to the highest degree of perfection. One could even speak of a perfection that is dangerous to Knowledge, given the difficulty of distinguishing the areas that have been restored."[30] Such concerns were reflected in a royal decree of January 15, 1818—that is, right in the midst of the recovery of the fragments of the Apollo—that endeavored to limit the extent of additions that were made to ancient artifacts.[31] The ruling established that "restorations are an obstacle to the certain interpretation of ancient monuments, which come to be permanently altered if the restorers are not fully informed as to the style as much as the ideas

that guided the ancient craftsmen in their work," and asserted that "it is universally desired by scholars that ancient works of art are left in the state in which they are found, adding fragments only in a way that does not alter the ancient ones." Andrea Milanese has considered this decree in relation to the vase restorations of Raffaele Gargiulo and his colleagues, and in particular the development of a middle way—a so-called *mezzo restauro* (half restoration)—that acceded to these demands.[32]

Turning to marble sculpture, the decree advised that restorations be done in plaster rather than marble,[33] "in order to avoid the inconvenience that ill-executed restorations need to be changed, with a waste of expense and little honor for the restorer." Alba Irollo provides an instructive example in a study of two marble statues from the Macellum at Pompeii that had been discovered in 1821.[34] The restorations, which had been executed in plaster in 1825 and 1826, were subsequently replaced by marble repairs in 1834 and 1835. This mirrors the opinion expressed in the 1818 decree, and prompts speculation as to whether the plaster restorations for the bronze Apollo could be viewed in this context**.** The addition of the drapery ends (and toe) in this medium may have been a concession to the legislation. These were elements that were critical to the visual success of the statue but that, in contrast to the filling of gaps, required a degree of creativity from the restorer. Their fabrication in plaster, rather than bronze, could thus be understood as a means of complying with the new regulations. The treatment of the Diana provides an even more striking example. Its presentation as a bust—that is, as a fragment—asserts that the figure had not been restored. Consequently, it may have been deemed inappropriate to reconstruct the missing left arm and finger—even though, with the discovery of the Apollo, there appeared an unequivocal model for such reconstructions.

However, if the treatment of the Apollo is to be seen as in some way(s) following this new order, it bears noting that the 1818 decree also featured a ruling specific to bronzes, namely that the patina should not be removed, since it provided a sure sign of the antiquity of the object. This was not the first time that this concern had been expressed—in September 1742, the Neapolitan king Charles VII had already seen fit to repeat an existing prohibition.[35] As has been demonstrated, it is clear that the Apollo's ancient patina was removed, and so this appears to be an outright contravention of the 1818 decree.

It is intriguing, therefore, to conclude with two documents that pertain to an amendment to this decree.[36] The first is a letter from Giovan Battista Finati, the inspector general of the Naples museum, to the museum's director, Michele Arditi, dated July 15, 1821, which noted that the scope of the restorers' work had become greatly circumscribed. Finati asked for the 1818 decree to be modified so that restorations could be resumed, acknowledging that the patina should suffer as little damage as possible. A document dated September 3, 1821, from the Marchese Ruffo, the

minister of the royal household, to Arditi suggests that the complaint was understood. It records royal approval that bronzes that came intact from the excavations ought simply to be cleaned of the dirt that was attached to them; that where the correct positioning of handles could be identified, they should be reunited without removal of the patina; and that bronzes that were heavily degraded should be set aside, and studied by a commission made up of the museum director, two members of the Reale Accademia Ercolanese di Archeologia, an artist from the Accademia di Belle Arti, Raffaele Trapani (the restorer of bronzes), and Raffaele Gargiulo (the restorer of vases). Most telling is the decree's stipulation that the reconstructions were first to be proposed in drawings, and then the restoration work done using a modern patina. Although repatination was permissible, it could be undertaken only following close study, documentation, and consensus. The strictures of the 1818 decree had been moderated, but any new freedom was dependent upon transparency and formal approval. By 1821 the Apollo had already been reassembled, repatinated, and put on display. Yet given that the work had only recently been completed (by 1819), it is hard not to have it in mind when reading these documents. Whether or not the restoration of the Apollo Saettante could have been an impetus to the adjustments to the 1818 decree, its treatment offers a valuable insight into the formalization of concerns regarding the methods and materials used by restorers in early-nineteenth-century Naples.

For help and support in our studies of the Apollo and Diana, we owe thanks primarily to our colleagues at the Museo Archeologico Nazionale: Valeria Sampaolo, Teresa Elena Cinquantaquattro, Jeannette Papadopoulos, and especially Luigia Melillo, who oversaw the conservation project and provided numerous archival references that were critical to the study. Additional archival material was obtained through the generosity of Andrea Milanese, and we are indebted to him for assisting with our research. At the Getty Museum, our investigations have been supported by Jerry Podany, Karol Wight, Claire Lyons, Jeffrey Maish, Kenneth Lapatin, and Jens Daehner. For assistance with technical analysis, we thank Marc Walton, Giacomo Chiari, Bruno Gallizzi, and Rita Giannini at the Getty Conservation Institue. For their comments on this article, we are also grateful to Marina Belozerskaya, Emma Libonati, and Gianfranco Adornato. For a full account of the conservation of the Apollo at the Getty Museum, see E. Risser and D. Saunders, "The Restoration and Conservation of the Bronze Apollo *Saettante* from Pompeii," in *Conservation in the Nineteenth Century,* ed. I. Brajer (London, 2013), pp. 195–204.

1 Naples, Museo Archeologico Nazionale, inv. 5629. All translations are our own.

2 Naples, Museo Archeologico Nazionale, inv. 4895.

3 "Apollo from Pompeii: Investigating an Ancient Bronze," J. Paul Getty Museum, http://www.getty.edu/art/exhibitions/apollo_pompeii/.

4 M. Grimaldi, "Il Tempio di Apollo a Pompei nella *Pompeianarum Antiquitatum Historia*," *Rivista di studi pompeiani* 20 (2009), pp. 39–48.

5 G. Fiorelli, ed., *Pompeianarum Antiquitatum Historia*, vol. 3 (Naples, 1864), pp. 10–11 (hereafter *PAH*).

6G. Fiorelli, ed., *Pompeianarum Antiquitatum Historia*, vol. 1 (Naples, 1860), p. 192; *PAH*, vol. 3 (note 5), p. 12.

7 *PAH,* vol. 1 (note 6), pp. 214–15; *PAH*, vol. 3 (note 5), p. 17. The story is dated September 23 in *PAH,* volume 3, but around October 12 ("in the last few days") in *PAH,* volume 1.

8 *PAH*, vol. 1 (note 6), p. 215. *PAH*, vol. 3 (note 5), p. 17, differs, noting the finds as a foot, a hand, and part of a leg. Our analysis of the statue shows that *PAH,* volume 1, is correct.

9 *PAH*, vol. 1 (note 6), pp. 216–17, 219.

10 Naples, Soprintendenza per i Beni Archeologici di Napoli e Pompei, Archivio Storico, *Inventario Arditi*, no. 8: "Life-size male statue of Apollo. Entirely nude except for a strip of drapery fluttering from the shoulders. The drapery folds over both of the arms, which are in the pose of drawing a bow. H. 5½ palms." The mention of its height indicates that it had been pieced together by this date.

11 M. Gélas, *Catalogue des statues bronzes, exposées dans une grand salle du Musée Bourbon à Naples* (Naples, 1820), pp. 7–8, no. 8. Diana is also noted (p. 25, with a find date of 1818). We are grateful to Luigia Melillo for alerting us to this publication. Both Apollo and Diana are recorded on display in the 1831 guide to the museum (F. Verde, J. Pagano, and C. Bonucci, *Guide pour le Musée royal Bourbon* [Naples, 1831–32], p. 215, no. 9; p. 222, no. 65). The Diana is visible in Achille Morelli's illustration of the bronze gallery (A. Morelli, *Musée royal Bourbon: Vues et descriptions des galeries* [Naples, 1835], pl. 17).

12 R. Gargiulo, *Raccolta de monumenti più interessanti del Re. Museo Borbonico e di varie collezioni private* (Naples, 1825), pl. 10.

13 In addition to Gargiulo, *Raccolta de monumenti* (note 12), see, for example, *Real Museo Borbonico* (Naples, 1832), vol. 8, pl. 60; D. Monaco, *Les monuments du Musée national de Naples* (Naples, 1884), pl. 91.

14 Naples, Soprintendenza per i Beni Archeologici di Napoli e Pompei, Archivio Storico, *Inventario Avellino* (1844), no. 81; *Inventario San Giorgio* (1849) no. 81. We are grateful to Andrea Milanese for sharing this information. The same archival sources indicate that the big toe on the left foot was also a plaster reconstruction—and so presumably the original was likewise never recovered. The toe in question is, in fact, that of the statue's right foot.

15 Naples, Soprintendenza per i Beni Archeologici di Napoli e Pompei, Archivio Storico, XXI C8, 23. We are grateful to Luigia Melillo for bringing this unpublished document to our attention.

16 A. Milanese, *Album Museo: Immagini, fotografiche ottocentesche del Museo Nazionale di Napoli* (Naples, 2009), p. 110.

17 On the restoration of ancient bronzes in Naples, see Andrea Milanese, Carol Mattusch, and Luigia Melillo in this volume; C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005); G. Lahusen and E. Formigli, *Grossbronzen aus Herculaneum und Pompeji: Statuen und Büsten von Herrschern und Bürgern* (Worms, 2007); U. Pannuti, "Ritratto di Epicuro in bronzo, dalla 'Villa dei Papiri' di Ercolano," *Atti della Accademia Nazionale dei Lincei*, 8th ser., 39, nos. 3–4 (1984), pp. 101–16; L. A. Scatozza Höricht, "Restauri alle collezioni del Museo Ercolanese di Portici alla luce di documenti inediti," *Atti della Accademia Pontaniana*, n.s., 31 (1982), pp. 495–540; and T. Caianiello, "Restauratori di sculture antiche a Portici: Dai 'primi errori sì decantati da piùgente' all'acquisizione di un metodo di intervento (1739–1781)," *Dialoghi di storia dell'arte* 6 (June 1998), pp. 54–69. We are grateful to Delphine Burlot for the last reference. On the history of the Naples museum and its restorers, more generally, see Milanese in this volume.

18 On the Agrippina Minor (Naples, Museo Archeologico Nazionale, inv. 5612), see Lahusen and Formigli, *Grossbronzen* (note 17), pp. 61–63; on the Sleeping Satyr (Naples, Museo Archeologico Nazionale, inv. 5624), see Mattusch, *Villa dei Papiri* (note 17), p. 318.

19 See Lahusen and Formigli, *Grossbronzen* (note 17), p. 171.

20 In *PAH*, vol. 1 (note 6), p. 215, Apollo is described as "if not the first bronze statue, certainly among the first in our king's Museo Regale Borbonico."

21 See Milanese, "Museo Reale" (note 17), pp. 392–93.

22 See Milanese in this volume.

23 See E. Taglialatela, "Michele Arditi (1746–1838) tra scavo e museo," in *Musei, tutela e legislazione dei beni culturali a Napoli tra '700 e '800*, ed. A. Fittipaldi (Naples, 1995), p. 132.

24 See Milanese in this volume. In a debate over the authenticity of a bronze *quadrusse,* reference was made to Gargiulo's having worked in Naples with Giacomo Ceci thirty years before. See R. Gargiulo, *Osservazioni del Professore Raffaele Gargiulo intorno al parere dato da alcuni archeologi romani su di un quadrusse creduto vero-antico da loro, mentre lo è falso-moderno* (Naples, 1843), and the response in *Bullettino dell'Instituto di Corrispondenza Archeologica* 4 (1844), pp. 49–67.

25 See O. Rossi Pinelli, "The Surgery of Memory: Ancient Sculpture and Historical Restorations," in *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, ed. S. N. Price, M. Kirby Talley Jr., and A. Melucco Vaccaro (Los Angeles, 1996), pp. 288–305.

26 Quoted by Rossi Pinelli, "Surgery of Memory" (note 25), p. 297.

27 The regulations were promulgated by Cardinal Bartolomeo Pacca. See Rossi Pinelli, "Surgery of Memory" (note 25), p. 298.

28 See, most recently, A. Milanese, "De la 'perfection dangereuse,' et plus encore: La restauration des vases grecs à Naples au debut du XIX^{e} siècle, entre histoire du goût et marché de l'art," in "'Une perfection dangereuse': La restauration des vases grecs, de Naples à Paris, XVIII^{e}–XIX^{e} siècles," ed. B. Bourgeois and F. Matz, special issue, *Technè* 32 (2010), pp. 18–30.

29 Berlin, Staatliche Museen, Antikensammlung, inv. F3264. See M. Svoboda, "Exploring the Restoration History of an Apulian Vase from Berlin," in "'Une perfection dangereuse': La restauration des vases grecs, de Naples à Paris, XVIIIe–XIXe siècles," ed. B. Bourgeois and F. Matz, special issue, *Technè* 32 (2010), pp. 47–53.

30 Quoted by Milanese, "De la 'perfection dangereuse'" (note 28), p. 20.

31 Quoted in full and discussed by A. Irollo, "L'Officina dei restauri dei marmi del Real Museo Borbonico: Spunti per la storia, le figure professionali e i metodi," in *Gli uomini e le cose,* vol. 1, *Figure di restauratori e casi di restauro in Italia tra XVIII e XX secolo*, ed. P. D'Alconzo (Naples, 2007), pp. 59–79. Irollo gives the date of the decree as January 25, but Andrea Milanese (see his essay in this volume, note 20) confirms that it is January 15.

32 See Milanese, "De la 'perfection dangereuse'" (note 28).

33 The use of plaster in the restoration of ancient marbles also served as a means by which reconstructions could be tested and approved. See C. Gasparri, ed., *La collezione Farnese* (Naples, 2009), p. 115.

34 See Irollo, "Officina dei restauri dei marmi" (note 31).

35 See Lahusen and Formigli, *Grossbronzen* (note 17), p. 157.

36 Naples, Soprintendenza per i Beni Archeologici di Napoli e Pompei, Archivio Storico, XXI C8, 6. We are indebted to Andrea Milanese for sharing and discussing these as yet unpublished documents.

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Fig. 4.4: Erik Risser, Michael Lira, and Clyde Crossan, J. Paul Getty Museum
Fig. 4.13: Getty Research Institute, Los Angeles (83-B6998)
Fig. 4.14: Getty Research Institute, Los Angeles (85-B25287)

5 | The Ephebe from the Via dell'Abbondanza
History of a Restoration

Luigia Melillo

FIGURE 5.1. The Ephebe from the Via dell'Abbondanza, 20–10 B.C. Bronze, 149 × 80 × 55 cm (58⅝ × 31½ × 21⅝ in.). Naples, Museo Archeologico Nazionale (inv. 143753)

FIGURE 5.2. The Ephebe at the time of its discovery in 1925

Discovery

The Ephebe from the Via dell'Abbondanza (fig. 5.1) was found in Pompeii by Amedeo Maiuri in 1925.[1] It was discovered in the domus now known as the House of the Ephebe (named for this bronze) or the House of Publius Cornelius Tages (*regio* I.7.11) (fig. 5.2).

The statue, dated to between 20 and 10 B.C., is a version of a mid-fifth-century B.C. Greek figure type. It was brought to light at the left doorpost of the corridor connecting atrium A and room 15 (a tablinum), and was still standing on its circular base, on which two supports for a bronze branch-shaped candelabrum were placed. On the floor by the base were a small altar and four bronze furniture or bed feet.

At the time of the eruption of Mount Vesuvius, the Ephebe, the altar, and the bronze feet had been covered with cloth, as indicated by the remains of mineralized fabric that are still visible at several points on the statue (fig. 5.3), as well as by the "copious charred scraps of flax or hemp"[2] that Maiuri collected during the excavation. That the Ephebe and other items were found this way indicates that the House of the Ephebe was undergoing renovation in A.D. 79. The objects, moved from their usual locations, had been collected and covered with cloth to protect them from dust and damage caused by the work.[3]

The House of the Ephebe was a typical middle-class home of a family enriched by trade. It is an aggregate of three adjoining houses, marked by opulence and sophistication. The indoor triclinium, which has a beautiful floor in opus sectile, is decorated with elegant designs in marble and colored glass paste; the walls are painted in the Fourth Style; and the ceiling is adorned with winged figures in golden stucco. In the famous outdoor triclinium are couches decorated with Nilotic scenes. These were protected from the sun by a pergola supported by four columns, next to which is the cylindrical base on which the bronze Ephebe was originally placed.

As mentioned above, the figure was unearthed still standing on its support. This consists of a hollow bronze Pompeian-style base into which an additional, lower marble base supported by three feet was inserted. The photograph taken at the time of discovery in 1925 shows the statue still partly submerged by lapilli, but perfectly recognizable (fig 5.4). The fracture in the upper

FIGURE 5.3. Remains of the mineralized fabric

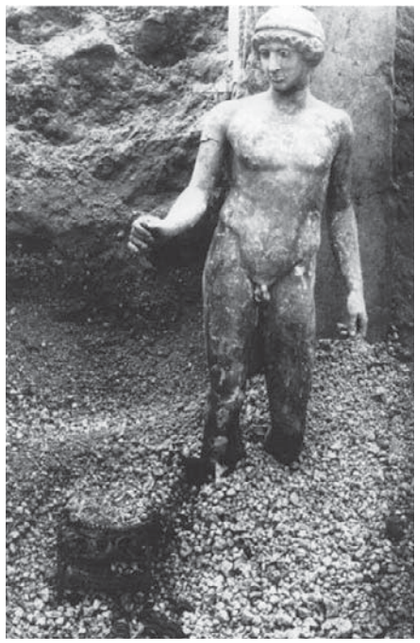


FIGURE 5.4. The Ephebe at the time of its discovery in 1925

right arm is clearly distinguishable. What cannot be seen are the calves and feet, which later proved to be heavily damaged by the weight of volcanic material.

FIGURE 5.5. Flattening of the palm of the right hand

FIGURES 5.6a–b. Front and back view of the Ephebe in 1925, after restoration

Restoration History

Maiuri accurately described the condition of the Ephebe as it was found: the left leg was broken at the knee and the calf of the right leg was in several fragments due to compression caused by the weight of volcanic debris; "the ancient break of the original cast where the right forearm was connected to the upper arm" had been reopened; the patina was the "well-known characteristic patina of the bronzes from Pompeii, almost perfectly homogenous in the pure oval of the face and in the hair, less so on the rest of the body, where, here and there, especially on the left arm, there is some blooming and bubbling of the metal"; the bronze base was slightly deformed and crushed; and the pupils had been lost.

Maiuri explained the lack of homogeneity in the color of the patina by observing that the statue not only had been adapted for use as a lamp bearer—as evidenced by the flattening of the palms to fit the branches (fig. 5.5)—but also had been gilded. He defined the gilding as "soft," "achieved not by applying a layer [of gilding] but by immersing the bronze, the precise technique of which eludes us." As we shall see below, however, the investigations carried out at the Centro di Restauro in Florence have confirmed observations from the Laboratorio di Conservazione e Restauro in Naples, which indicate that this appearance is the result not of gilding but of scrubbing of the metal during aggressive surface cleaning.

The first restoration of the Ephebe was undertaken in 1925, in the Gabinetto dei Restauri of the Naples Museo Archeologico, by the draftsman Michelangelo Puccetti, under Maiuri's direction. It aimed at "the uniting of the separated parts of the lower limbs, the consolidation of the right forearm, and the addition of a solid internal framework to secure the original ponderation of the figure."[4]

The photographs from 1925, preserved in the photographic archive of the Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, confirm Maiuri's report. In the photographs the fracture in the upper right arm, visible in the image made at the time of discovery (see fig. 5.4), has been reassembled and camouflaged, as have the fragmented parts of the legs and feet (figs. 5.6a–b). In addition, the surface of the statue and the base is still to be cleaned. Unfortunately, we do not have any documentation following the completion of the restoration that might show the aggressive cleaning that led to the widespread scrubbing that Maiuri had interpreted as gilding. Traces of this work remain visible, as Maiuri said, "here and there on the body and especially under the left arm and, in very shiny patches, on the back" (fig. 5.7). Maiuri's claim that the Ephebe was gilded is perplexing, given his experience and knowledge of the materials, and leads us to assume that he did not carefully oversee critical operations such as the cleaning of surfaces.

FIGURE 5.7. Abrasion due to the aggressive cleaning carried out in 1925

FIGURE 5.8. Internal armature (brass bars) inserted through legs in 1925

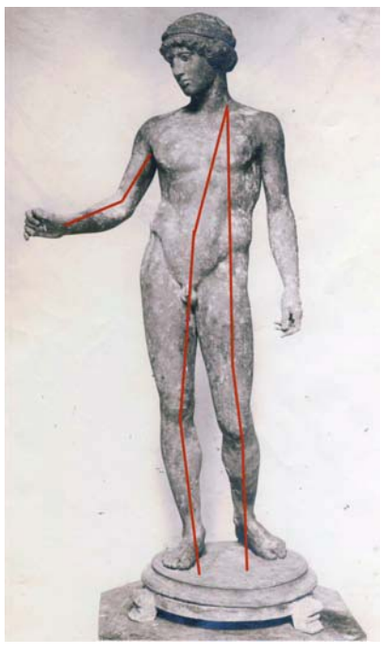


FIGURE 5.9. Arrangement of internal armature inserted in 1925

In any case, the cleaning must have been done immediately after the photography was completed, since Maiuri makes reference to the "gilding" in his publication of the statue (1925–26).

Restoration Techniques

Although the images taken in 1925 are valuable, they provide a limited amount of information. The conservation work carried out in 1996 at the Laboratorio di Conservazione e Restauro at the Museo Archeologico allows us to document the 1925 restoration in more detail. The results, presented here for the first time, add to our understanding of the particular and unusual techniques that were used to restore bronzes at the Naples museum in the early decades of the twentieth century.

Because it was in a precarious condition and at risk of further damage, the statue was dismantled, and this allowed for new research.[5] It was possible to confirm that the statue was supported by an armature consisting of two brass bars of rectangular section, which are made up of at least two segments. These were shaped and welded with tin solder at the knees (fig. 5.8). One bar was inserted through the left heel and, passing through the leg and thigh, comes up to the left shoulder; the other was inserted through the right foot and continued up to the pelvis, to then bend to the left shoulder, where it joined with the bar from the left (fig. 5.9). The upper ends of both were wrapped with fabric that was attached to the bronze with cement (fig. 5.10). The lower ends were fitted into slots cut into the bronze base, under which were placed wooden strips, filled with pigmented plaster, to distribute the weight of the statue.

To provide stability to the internal support of the Ephebe and to furnish a surface on which to secure the fragments, part of the thighs and the legs were filled with cement (fig. 5.11). To avoid direct contact of the latter with the ancient bronze, an unusual method was used, which, as far as I know, is documented here for the first and only time. Between the inner wall of the statue and the cement was a yellow sateen fabric that protected the ancient metal. Remains of the sateen were also found inside the right foot (fig. 5.12).

The use of cement in bronze statues is attested at around the same time in the restoration of another famous sculpture, the Ephebe of Selinunte (Castelvetrano, Museo Civico). This statue was discovered in 1882 in Sicily—in Ponte Galera, in the territory of Selinunte—and dates from between 480 and 460 B.C. The statue was restored in the laboratory of the Real Museo Archeologico of Syracuse in 1928 by the restorer Giuseppe D'Amico, who, as reported by Pirro Marconi, was the inventor of a quick-setting concrete. Following the investigations conducted by the Istituto Centrale per il Restauro in 1983, this has been revealed to be cement.[6] The use of cement (or mortar made with gypsum mixed with volcanic sand) not simply as a fill but also as a supporting surface on which to attach fragments during reconstruction has also been well documented in

FIGURE 5.10. Upper end of one of the brass bars, wrapped with fabric and attached to the bronze with cement

FIGURE 5.11. Ephebe's thigh filled with cement

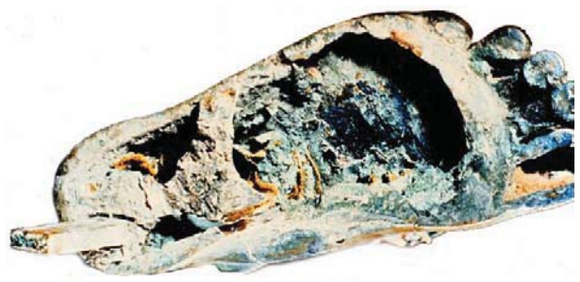


FIGURE 5.12. Remains of sateen found inside Ephebe's right foot

FIGURE 5.13. Bronze statuette of Alexander I Balas (?). H. (with base) 76.5 cm (30⅛ in.). Naples, Museo Archeologico Nazionale (126170)

the recent restoration of a small bronze sculpture in the Museo Archeologico in Naples. It is a Roman copy of a Hellenistic original of the mid-second century B.C., and represents, perhaps, Alexander I Balas dressed as Hermes (fig. 5.13).[7] This little statue, found on June 17, 1901, by Antonio Sogliano in the atrium of a house in Pompeii (*regio* V. 3), was restored for the first time in the Naples museum between 1902 and 1908, the year it appeared in Arnold Ruesch's guide to the Museo Archeologico. The left leg, which was detached from the thigh, was reassembled using a technique that is similar, as we shall see below, to that adopted for the right arm of the Ephebe from the Via dell'Abbondanza. The two component parts were joined with cement, and this served as the support for an integration that was made using colored plaster and colophony mixed with metal powder (fig. 5.14).

The weight of the legs of the Pompeian Ephebe, filled with cement during the restoration, was undoubtedly the main cause of the statue's precarious state in 1996. The removal of this harmful filling required careful work, especially given the fragmentary nature of the legs and feet. Particularly delicate was the treatment of the right leg (fig. 5.15), where the calf had broken into several fragments on account of the weight of volcanic material that had buried the statue.

In the leg were found pieces of wood that had been used to secure the brass armature in its correct position prior to the pouring in of the cement. There were also fragments of tightly

FIGURE 5.14. Alexander I Balas: part of thigh, joined with cement

FIGURE 5.15. Right leg of the Ephebe during conservation

woven fabric placed between the cement and ancient bronze. These served the same purpose as the sateen fabric described above. The conservation of the leg has also allowed us to record the traces left by the molds used to cast the statue in antiquity. Similar evidence was also found in the left leg, which was broken at the bend of the limb and at the top of the ankle (fig. 5.16).

The right foot was fractured in several places. It had been filled with concrete and protected with sateen in contact with the ancient wall (see fig. 5.12). A few areas of ancient repair (cold patches) were also documented.

The cleaning of the left foot was of particular interest for the understanding of the treatment of the statue in antiquity. As Maiuri had already observed in 1925, the circular bronze base was not original but had been adapted to the youth. This was confirmed by a significant widening of the space for the pin inside the left heel. It was originally intended to be smaller and rectangular (fig. 5.17).

The system used to secure the right arm at the time of the discovery was complex, and already appeared partially detached at the time of our investigation. Three plates of brass were welded inside the upper arm. In each, two holes were made that corresponded with those that had been made in the shoulder. The assembly was then effected using threaded brass screws (fig. 5.18). A layer of mortar (*malta*) was spread on this armature to make a compact and homogenous surface, on which were placed the ancient patches that masked the join between the shoulder and the arm (fig. 5.19).

FIGURE 5.16. Ephebe's left leg during conservation: traces of the wax-to-wax join between separate sections are visible as the ridge in the center of the image.

FIGURE 5.17. Underside of Ephebe's left foot, showing enlargement of space for pin at the heel

FIGURE 5.18. Brass plates and screws used in the reassembly of right arm

FIGURE 5.19. Join between shoulder and right arm

FIGURE 5.20. Wood support inserted into the neck in 1925

Finally, the system used by Puccetti to anchor the head of the Ephebe to the body was peculiar. He inserted a support of shaped wood that was fixed into the neck with cement (fig. 5.20). The join between the neck and head was then masked with a pigmented grout.

Recent Conservation and Definition of Ancient Manufacture

In 1998 the Ephebe was transferred from the Museo Archeologico in Naples to the Centro di Restauro at the Museo Archeologico in Florence, in order to conduct surveys that had not been made in Naples and to finish the conservation work for the exhibition "*—qual era tutto rotto*": *L'enigma dell'Idolino di Pesaro, indagini per un restauro* (Florence, 1998–99).[8] The work that was carried out in Florence consisted mainly of a thorough cleaning of the exterior surface, the removal of excess cement that had remained within the sculpture since 1925, and the replacement of the internal brass armature. The new support consisted of a steel disk crossed by two bars that run up the legs, secured with resin and plates bolted at the knees and near the ankles. A layer of silicone was placed between the ancient base and the steel disk to ensure a better fit between the parts. The support thus minimizes the weight put on the Ephebe's fragile legs and on the bronze base. The cleaning also brought to light the original copperplates used in the lips and nipples. Fragments of copper wire used for the lashes were also found inside one of the eyes.

The radiographic examinations undertaken in Florence have finally allowed us to evaluate the well-preserved metal, and have also provided useful information regarding the manufacture of the Ephebe. It was an indirect lost-wax cast, as demonstrated by, among other things, the chaplet holes and the traces left by the sections of the molds in the arms and legs (which were already documented during the restoration in Naples in 1996). Radiographs also allowed us to identify the different parts in which the statue was cast: the head, the arms, the chest with the right leg, the left leg, the genitals, and the extremities of the feet.

THE EPHEBE FROM THE VIA DELL'ABBONDANZA | NOTES

1 Naples, Museo Archeologico Nazionale, 143753; A. Maiuri, "L'Efebo di Via dell'Abbondanza a Pompei," *Bollettino d'arte*, 2nd ser., 4, no. 8 (1925–26), pp. 337–53; W. Amelung, "Bronzener Ephebe aus Pompei," *Jahrbuch des Deutschen Archäologischen Instituts* 42 (1927), pp. 137–51, pls. 11–23; *Le collezioni del Museo Nazionale di Napoli*, vol. 2 (Rome, 1989), p.146, no. 252; H. Hiller, "Zum Xantener Bronzeknaben," in *Akten der 10. Internationalen Tagung über antike Bronzen, Freiburg, 18–22 Juli 1988* (Stuttgart, 1994), pp. 203–4, fig. 7; W.-D. Heilmeyer, *Der Jüngling von Salamis* (Mainz, 1996), pp. 40–43, pl. 67; M. Iozzo, ed., "*—qual era tutto rotto": L'enigma dell'Idolino di Pesaro, indagini per un restauro*, exh. cat. (Florence: Museo Archeologico Nazionale, 1998), pp. 36–38, pl. XVII.

2 Maiuri, "Efebo di Via dell'Abbondanza" (note 1), p. 337.

3 A number of other bronze statues from Pompeii were discovered in temporary or alternative locations. The Ephebe found on November 27, 1900, in the Fondo Barbatelli, near Porta Vesuvio, had been placed with its spiral-shaped lamp in a service room together with other objects; see A. Sogliano, "L' Efebo in bronzo rinvenuto a Pompei," *Monumenti antichi dei Lincei* 10 (1901), pp. 641ff., pls. XVI–XXVI; P. Zanker, *Klassizistische Statuen: Studien zur Veränderung des Kunstgeschmacks in der römischen Kaiserzeit* (Mainz, 1974), pp. 37–38, no. 34; *Collezioni del Museo Nazionale di Napoli*, vol. 2 (note 1), p. 146, no. 251. The lamp bearer from the House of Julius Polybius (*regio* IX.13.1–3), discovered in 1977, was found in the triclinium northwest of the peristyle, where it had been temporarily placed together with other objects while renovations in the house were underway; see F. Zevi, "*Apollo lychnouchos* rinvenuto a Pompei nella Casa di Giulio Polibio," in *Media Save Art '91, 17–22 giugno 1991, Roma, Complesso monumentale di S. Michele a Ripa* (Rome, 1991), p. 30; S. Ensoli Vittozzi, "Apollo lampadoforo," in *Riscoprire Pompei*, ed. L. Franchi Dell'Orto and A. Varone (Rome, 1993), pp. 262–64; C. C. Mattusch, ed., *Pompeii and the Roman Villa: Art and Culture around the Bay of Naples*, exh. cat. (Washington, D.C.: National Gallery of Art, 2008), pp. 141–43 (with bibliography).

4 All quotations of Mauri in this essay are from his "Efebo di Via dell'Abbondanza" (note 1), pp. 338–40.

5 Conservation work, disassembly, and temporary reassembly of the Ephebe were directed by the author and executed by the conservator Giovanni Cirella, whom I thank for the valuable collaboration. The photographic documentation of 1996 was carried out by Gennaro Morgese.

6 On the Ephebe of Selinunte, see P. Marconi, "Palermo: Restauro della statua bronzea d'arte greca detta 'L'Efebo di Selinunte,'" *Bollettino d'arte del Ministero della Pubblica Istruzione*, 2nd ser., 8 (1928), pp. 231–36; A. M. Carruba, "Der Ephebe von Selinunt," *Boreas: Münstersche Beiträge zur Archäologie* 6 (1983), pp. 44–60, pls. 1–6 (with bibliography).

7 On the bronze statuette of Alexander I Balas(?) (Naples, Museo Archeologico Nazionale, 126170), see A. Sogliano, "Pompei: Relazione sugli scavi eseguiti durante il mese di giugno 1901," *Notizie degli scavi di antichità comunicate alla R. Accademia dei Lincei* (1901), pp. 209–304; A. Ruesch, ed., *Guida illustrata del Museo Nazionale di Napoli* (Naples, 1908), p. 200; G. M. A. Richter, *The Portraits of the Greeks* (London, 1965), vol. 3, p. 271; *Collezioni del Museo Nazionale di Napoli*, vol. 2 (note 1), p. 140, no. 220; F. Carlomagno, "Statuetta di principe ellenistico come Mercurio (Alessandro I Balas?)," in *Ritratti: Le tante facce del potere*, ed. E. La Rocca and C. Parisi Presicce, with A. Lo Monaco, exh. cat. (Rome: Musei Capitolini, 2011), p. 315. The conservation was carried out in 2011 at the Laboratorio di Conservazione e Restauro of the Museo Archeologico Nazionale in Naples by the conservator Marina Vecchi in collaboration with the graduate student Lisa Massa, under the direction of the author.

8 The conservation at the Centro di Restauro in Florence was directed by Mario Iozzo, then deputy director of the center, and executed by the conservator Giuseppe Venturini. Contributors were Roberto Pecchioli (X-rays), Marcello Miccio (analysis of patina), and Antonino Sentineri (photographic evidence). The internal support was designed and built by Giuseppe Venturini and Piergiovanni Nagrini. I thank Dr. Iozzo and Giuseppe Venturini for generously providing me with information about the work carried out in Florence.

ILLUSTRATION CREDITS
Fig. 5.1: J. Paul Getty Museum with permission from Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei
Figs. 5.2, 5.4, 5.6a-b: Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Archivio Fotografico
Figs. 5.3, 5.5, 5.7–5.20: Courtesy of the Laboratory for Conservation and Restoration at the National Archaeological Museum, Naples

6 | The Birth and Second Life of the Minerva of Arezzo

Salvatore Siano

a

b

FIGURES 6.1a–b. Minerva of Arezzo, 300–270 B.C. Bronze, H. 155 cm (61 in.). Florence, Museo Archeologico Nazionale (inv. 3). The statue is shown after study and treatment between 2000 and 2008.

Conservation of the Minerva of Arezzo (figs. 6.1a–b) carried out at the Centro di Restauro of the Soprintendenza per i Beni Archeologici della Toscana, Florence, between 2000 and 2008 offered an opportunity to perform in-depth archaeometallurgical investigations. Thorough analyses were undertaken in order to characterize the statue's state of preservation, understand past restorations, and define the conservation methodology. Technical studies of the interior and exterior, X-radiography, and compositional analyses of the materials revealed several interesting features that shed light on the statue's creation as well as its later reassembly and integration. The results provide a significant contribution to the long-running debate regarding the dating of the Minerva, and present new data on ancient casting techniques as well as information about the restoration approaches of previous centuries.

Historical Note

The life-size Minerva of Arezzo was part of the famous collection of large bronzes owned by the Medici (the "grandi bronzi medicei"), which also included the Chimaera of Arezzo, the Arringatore (discovered in the environs of Lake Trasimeno), and the Idolino of Pesaro (all Florence, Museo Archeologico Nazionale). The statue was found during the digging of a well in 1541, near the church of San Lorenzo in Arezzo.[1] About a year later it was acquired by Cosimo I de' Medici and brought to the Palazzo Vecchio in Florence.[2] The statue was placed in the open, on the balcony over the *ricetto* of the rooms of Cosimo's Guardaroba until 1559, whereupon it was kept with other finds in the Scrittoio di Calliope (Cosimo's private study). Later on, however, in 1570, the Minerva was documented again in its previous location, where it may have been situated for a long time.[3]

Although there is no surviving documentation regarding this early phase of the Minerva's second life—that is, after it had been brought to light—we can reasonably assume that the statue was restored soon after it was discovered. This would have been necessary in order to remove deposits of earth, to assemble the twenty fragments of which the statue is comprised, and to integrate the missing areas of the lower part.

FIGURE 6.2. Drawing of the Minerva by Giuseppe Menabuoni (Italian, 1708–after 1745), line engraving by Antonio Pazzi (Italian, 1706–after 1768). From Antonio Francesco Gori, *Museum Etruscum*, vol. 2 (Florence, 1737), pl. XVIII

The Minerva is mentioned for the first time in the Uffizi Gallery's inventories in 1676, when the absence of its right arm is noted. This observation is repeated in the inventory initiated in 1704.[4] A reconstructed arm, made of gypsum, was added sometime in the eighteenth century. It is mentioned in the inventory of 1769,[5] but is likely to have been fashioned well before, since it is depicted in an engraving published by Antonio Francesco Gori in 1737 (fig. 6.2).[6] The arm is shown with the elbow and wrist bent, as if to support a lance—a posture iconographically suitable for the goddess.

In 1783, according to the inventory notes, the statue's right arm was missing once again. Two years later the sculptor Francesco Carradori (1747–1824) carried out what is believed to have been the statue's last structural restoration. He attached a new arm in bronze, whose form gave the figure an oratorical posture and strongly altered its overall appearance. The arbitrary oratorical attitude was likely motivated by display purposes, since it would have been considered more harmonious with the poses of the Arringatore and the Idolino. (In 1782 the antiquarian of the Uffizi, Luigi Lanzi, had moved the Minerva from the gallery's Corridoio di Ponente to the Corridoio di Mezzogiorno, where it was exhibited together with the other *grandi bronzi* of the Medici collection.) The sculptor also added the missing part of the snake on the helmet in metal. Since the part is visible in the eighteenth-century engraving mentioned above (see the lateral view of the helmet in fig. 6.2), it might previously have been modeled in gypsum, wax, or another such material. From 1785 to 2000 the Minerva of Arezzo appeared as shown in figures 6.3a and 6.3b.

Attribution and Dating

The documents that describe the discovery of the figure report that it was found in an area with a mosaic floor. This archaeological context was interpreted as a temple of Pallas Athena, and the sculpture as a representation of the goddess.[7]

In the second half of the eighteenth century the Minerva of Arezzo was considered, on stylistic grounds, both an ancient Greek sculpture (by Johann Joachim Winckelmann)[8] and an Etruscan work (by Luigi Lanzi).[9] However, since the end of the nineteenth century it has been associated with a group of replicas of the so-called Athena Vescovali, derived from an archetype attributed to Praxiteles (fl. 370–330 B.C.). The Vescovali group includes some thirty representations of the goddess.[10] All are in marble except the bronze Minerva of Arezzo, which has been referred to as a Hellenistic variation of the Praxitelean original.[11] Before the recent analysis and conservation, it remained unclear whether the statue is an original of such a type (dating to 280–270 B.C.) or a later Roman replica (datable to around the first century A.D.). Armando Cherici's study, based on archival documents and a careful examination of the results of an excavation campaign carried out during the 1930s near the church of San Lorenzo in Arezzo,[12] seems to

FIGURES 6.3a–b. The Minerva before the recent conservation project. Yellow dots: screws. Red dots: nail heads. White dotted line: upper border of area of missing ancient metal

support the latter conclusion. Furthermore, Cherici observed that from a stylistic standpoint the Minerva could not be dated before the first century B.C.[13]

The excavations in the 1930s brought to light a Roman domus[14] whose context includes a well, which was still in use up to recent times. These and other elements led Cherici to consider a close association of the site with the one in which the Minerva was discovered in 1541, and hence to attribute the statue to the pre-imperial era. In such a context the Minerva could be considered an ornamental object from a rich Roman house rather than a religious statue. However, opposing hypotheses have been formulated, such as the proposal of Luigi Adriano Milani, who interpreted the hole at the back of the head as a functional element whereby the statue was used as an oracle,[15] and the stylistic analysis by Renate Kabus Jahn and Tobias Dohrn, which dates the sculpture to the first decades of the Hellenistic period.[16] The catalogue of the 2001 exhibition in Arezzo, *Etruschi nel tempo: I ritrovamenti di Arezzo dal '500 ad oggi,* suggests a dating on stylistic grounds between the second and first centuries B.C.[17] However, the studies carried out during the recent conservation work opted for a date around the first decades of the third century B.C.[18]

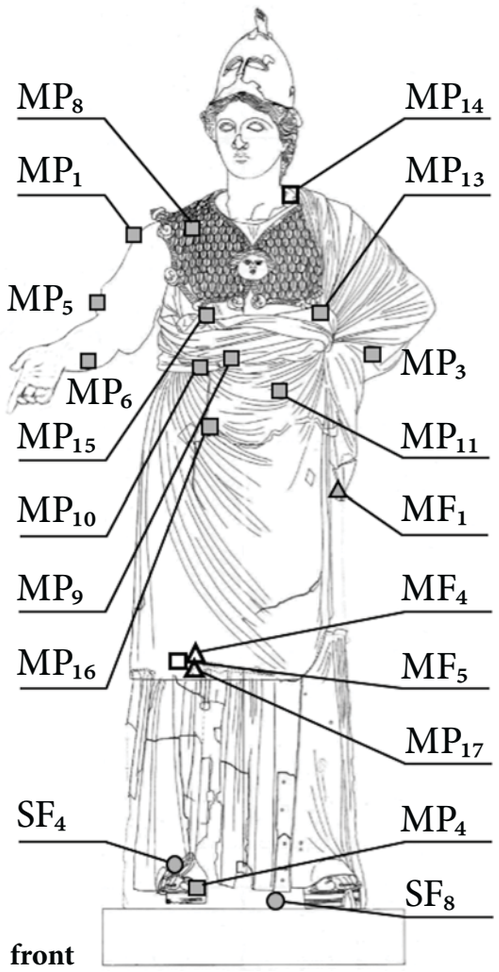
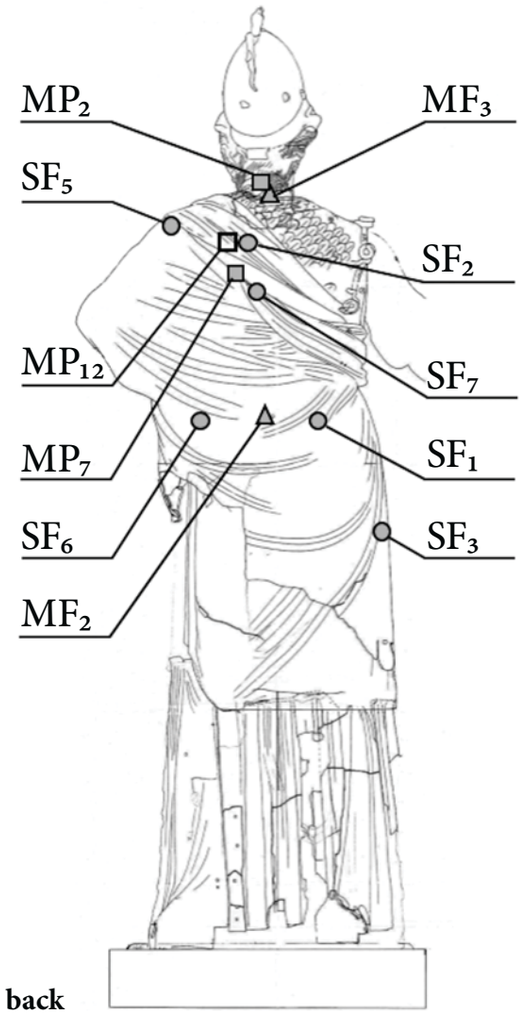


FIGURE 6.4. Locations used for material sampling



Methods of Study

The decision to study and conserve the Minerva of Arezzo was motivated by the need to perform an overall static consolidation of the sculpture, along with the removal of unstable materials used in previous restorations. At the outset of this project it had not been decided whether Carradori's eighteenth-century integrations should be removed.

The statue was thoroughly studied through technical examination, X-radiography, and compositional analysis. X-radiographic investigations were carried out both before conservation work began (in order to document the structural interventions in previous centuries) and after the many pieces composing the statue were dismounted (to assist in interpreting the means by which the statue was made in antiquity).

The modern patinations of the sculpture were analyzed using optical microscopy, scanning electron microscopy with energy dispersive X-ray (SEM-EDX), Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and gas chromatography, while the chemical analyses of the alloy were achieved by means of atomic absorption spectroscopy and SEM-EDX with wavelength dispersive X-ray spectroscopy. Several material samples were also taken from the figure, including stratification fragments (SF_n), metal fragments (MF_n), and metal burr (MP_n) produced by means of a microdrilling device, collected from the sites indicated in figure 6.4.

A report on the main features of the state of conservation before the recent intervention follows, providing information about the different restoration approaches of the sixteenth and late eighteenth centuries. The essay then focuses on the interpretation of the peculiar casting and assembling procedures used to craft the Minerva in antiquity.

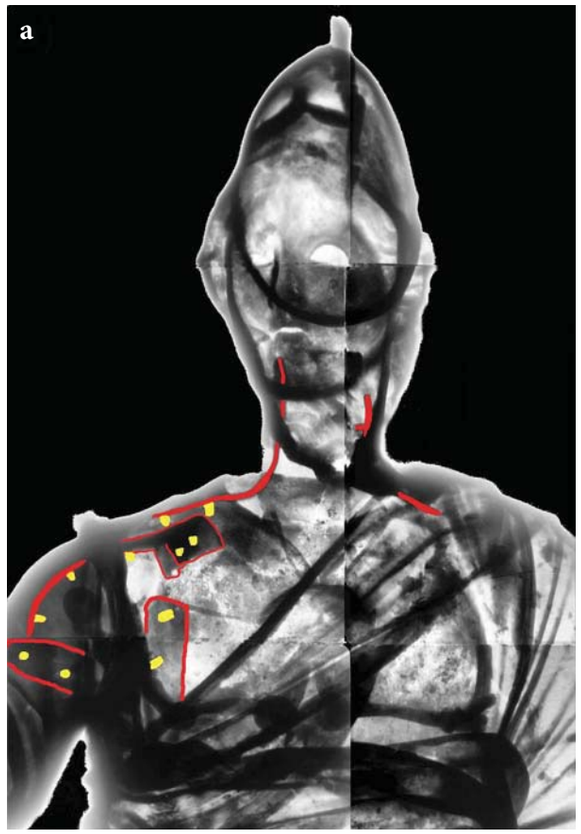
FIGURE 6.5. Detail photograph taken before disassembly of the statue, showing the internal wood support visible through the aperture of the left eye, along with details of the dark brown surface

State of Conservation

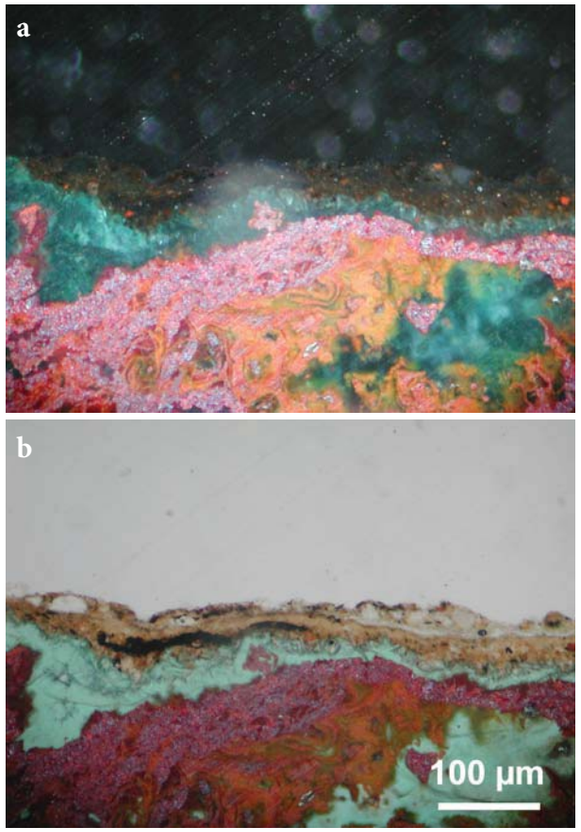
Before the conservation project began in 2000, the lower part of the Minerva was a reconstruction, made using stucco (lime, sand, and organic fibers), gypsum integrations, and organic filling (as is arguable from some whitish areas, which are visible in figs. 6.3a, 6.3b). In particular, the ancient metal was missing in a large area of the back, below the pelvis (see the white dotted line in fig. 6.3b).

The preliminary visual inspection and radiography indicated that the statue was composed of a number of pieces assembled on an internal wood support—visible through the apertures of the eyes (fig. 6.5) and the hole at the back of the head. The radiographic images show the mounting of the head and right arm by means of iron sheets and screws (fig. 6.6a), along with the connection of the many fragments of the lower part to the wood support using square-sectioned iron nails of different sizes (fig. 6.6b).

The longest nails were used to consolidate and support the whole figure and the largest fragments, while shorter nails carefully fixed some of the smaller fragments. At the top of the left thigh, two large nail heads that passed through a large transverse fracture on the front were also visible to the naked eye.



FIGURES 6.6a–b. X-radiographs (negative rendering) of the upper (a) and lower (b) parts of the sculpture. In figure 6.6a, iron sheets and screws are highlighted in red and yellow, respectively.



FIGURES 6.7a–b. Metallographic cross sections under reflected light showing representative stratigraphy of a corroded bronze surface with two superimposed patination layers (6.7a: black field; 6.7b: bright field)

The outer surfaces of the Minerva appeared to be almost uniformly coated with dark brown patinations (see figs. 6.3a, 6.3b, 6.5), which were applied during restorations following the statue's discovery. On the back, significant hard earth concretions were still present (see fig. 6.3b), with a thickness of up to approximately one centimeter in the folds of the himation. These indicate that the cleaning operations carried out on the back soon after the discovery were relatively light in contrast to those on the front. Such a disparity was likely motivated by display considerations: Renaissance artists usually left unfinished the rear of statues to be exhibited in niches or up against a wall.

The stratigraphies of the SF_n samples taken from the metal revealed the presence of at least two patination layers of similar composition, including gypsum, silicates, calcite, and calcium oxalates in an organic binder, along with ocher and black carbon pigments, to achieve the dark brown appearance (figs. 6.7a–b). Further indications of multiple applications were obtained by analyzing the surface finish of the wood base, where patinations were sometimes separated by gypsum layers. Figure 6.8a, for example, is a cross-section detail of the sample SF_8, taken from the restored base, showing two similar brown patinations separated by a white gypsum layer. At the outermost level a thin whitish wax layer is also recognizable.

Gas chromatography and FTIR of a powdery sample collected around the site of SF_8 by scraping demonstrated that the binder used was linseed oil. The analysis also indicated the presence of spermaceti and beeswaxes, likely used for polishing. Others who have studied the Minerva have also pointed out the presence of colophony,[19] though it was not found in the sample directly analyzed by us.

It is worth noting that, apart from some differences among the relative component fractions and binders, this type of coating, which is commonly known as bronzelike patination,[20] has also been found on Florentine marble and bronze masterpieces of the Renaissance, such as the *Quattro Santi Coronati* by Nanni di Banco (church of Orsanmichele),[21] the *David* by Andrea del Verrocchio (Museo Nazionale del Bargello),[22] and the *David* by Donatello (Bargello).[23] The first explicit reference to such organic-binder patination has been found in archival documents of the eighteenth century.[24]

The patination and waxing layers were separated from the metal substrate by earthy concretions and mineral deposits, which indicates that they had been applied to a surface that had not been fully cleaned. As clearly shown by optical and SEM-EDX examinations (fig. 6.8b), encrustations were mainly of calcite (calcium carbonate), with some incorporated sand (silicates). A significant amount of lead was found in the corrosion layers above the ancient metal substrate, and was identified by XRD as cerussite, along with quartz, calcite, aragonite, and malachite. In a backscattering electron microscopy cross-section detail of the sample SF_2, taken from the back of the sculpture

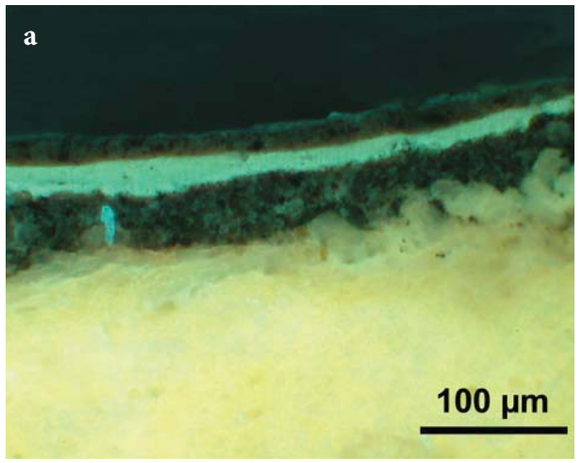


FIGURE 6.8a. Cross section of the sample SF_8 (from the base) showing two main patination layers separated by a gypsum layer

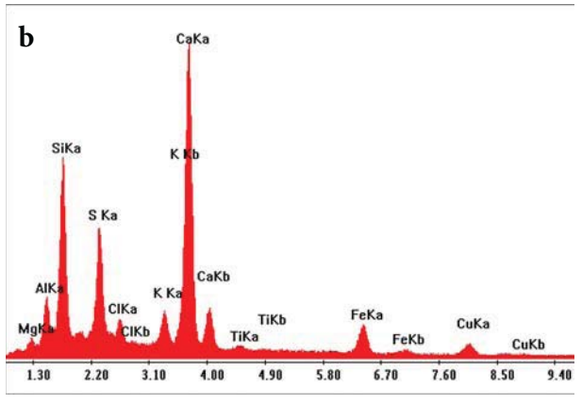


FIGURE 6.8b. Representative EDX spectrum of the patinations

(fig. 6.9), the lead distribution is evidenced by the white spots. Similar features were found in other cross sections, as well as in some metallographic samples including encrustation layers.

The bronze substrate preserved beneath the patination and encrustation layers was moderately to heavily corroded, corresponding to the level of surface mineralization, which ranged from tens to several hundreds of microns in thickness. Figures 6.7a–b represent a case of heavy corrosion. Besides such heavily corroded areas (which allowed for the recognition of only a rough trace of the original surface), better-preserved areas were also identified, such as in figure 6.10 (MF_2 was the only sample taken by coring), which exhibits a thin oxidation layer and low chlorine content. These factors may have inhibited further corrosion. For this and the other metal fragments investigated here, typical bulk corrosion phenomena usually encountered in ancient bronzes were also observed, with an apparent predominance of intergranular and interdendritic corrosions.

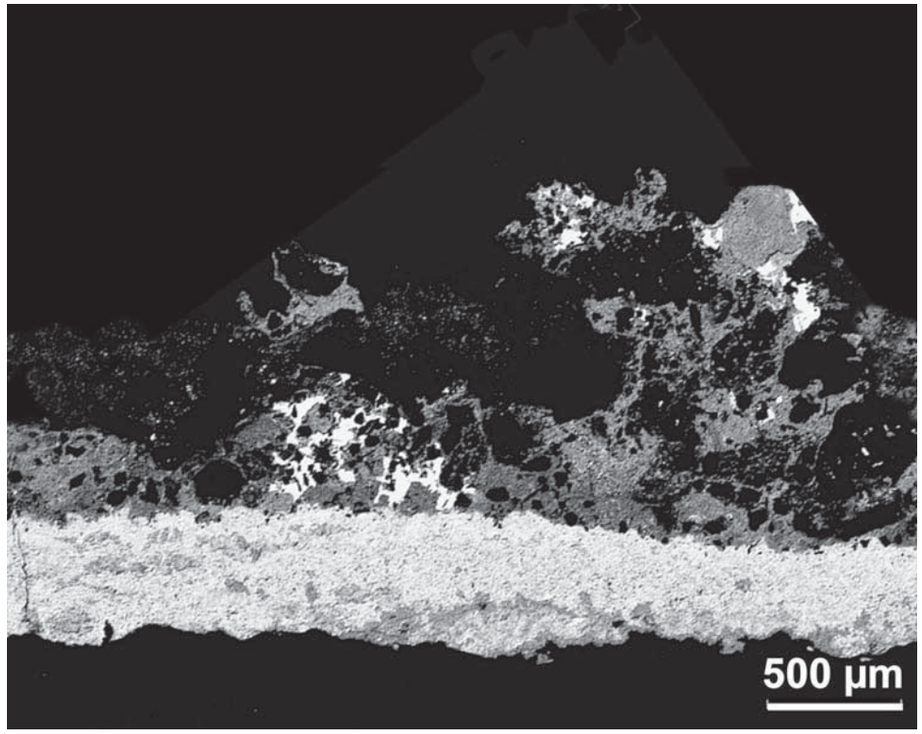


FIGURE 6.9. Cross section (SEM, backscattering) of a mineralized metal sample (from the back), with earthy concretions (SF_2) embedding lead minerals (white spots)

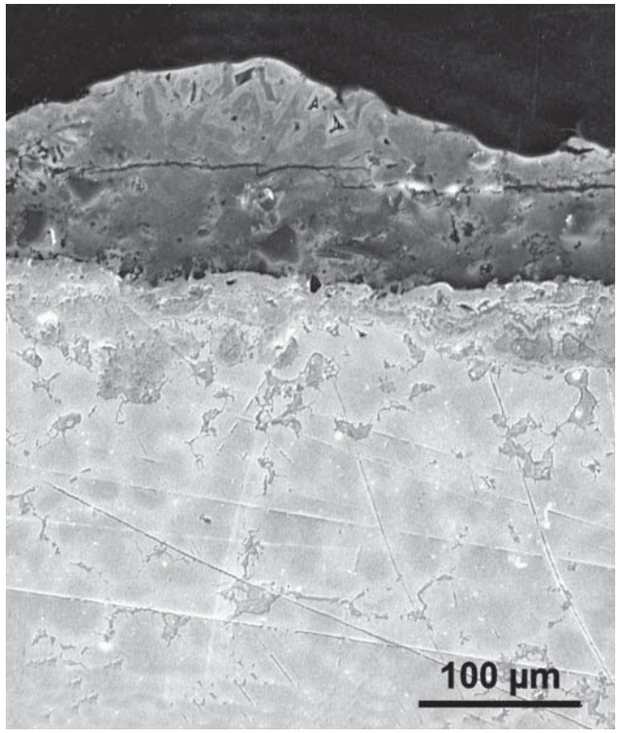


FIGURE 6.10. Cross section (SEM) of the sample MF_2 showing moderate surface corrosion under the earthy concretion

FIGURE 6.11. Preliminary cleaning treatment carried out by the conservators Renzo Giachetti and Manuela Nistri

Dismounting the Minerva and Uncovering the Surface

The structural and analytical investigation summarized above helped to define the conservation of the Minerva of Arezzo, which included the removal of the historical patinations and the stucco integrations, together with the replacement of the internal wood support. Tests to uncover the surface began during the first half of 2001, while the dismounting started in the second half of 2002, following the decision to remove the right arm (it was still not yet decided whether this would ultimately be remounted).

Mechanical and laser ablations along with a chemical treatment were used to remove the earthy encrustations and patinations. These were mainly carried out before the disassembly of the many fragments (fig. 6.11), but the final refinement was performed on single pieces subsequent to their dismounting, primarily with a scalpel. Concurrent with the early cleaning treatments, the ancient fragments were gradually set free from the restorers' stucco and nails (figs. 6.12a–d).

During the disassembly it was noted that those who had restored the sculpture in the past had fitted the fragments together with a high degree of accuracy. This was true even for some pieces only a few centimeters in size that constituted the folds of the peplos and the lower border of the left side. Figure 6.13 displays all the fragments (apart from head and bust), with the numbering used during the conservation project. The circles mark the holes through which the nails were inserted in the wood core.

The dismounting of the head and right arm was more complex, since they were firmly fixed with four iron sheets and fifteen screws. In particular, the head was secured with two L-shaped lateral iron sheets connecting the neck to the shoulders, while the right arm was anchored to the right shoulder and scapula by means of two almost orthogonal T-shaped iron sheets, as seen in figure 6.6a. They were dismounted by removing the screws after drilling them through, as shown in figure 6.14.

FIGURE 6.13. 2000–2008 project: fragments dismounted

FIGURE 6.14. Right arm with screws removed, and detail of one of the screws

FIGURES 6.12a–d.

(a) Uncovering of the mineralized bronze surface from the dark patinations in the area of two large nails at the top of the left thigh.

(b) Early phases of the removal of stucco integrations in the area of the right foot.

(c, d) Examples of a fragment of the himation set free from the stucco integrations and nails.

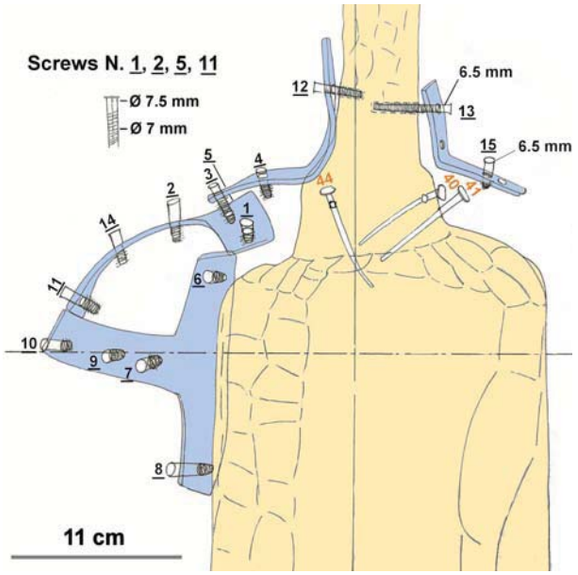


FIGURE 6.15. Supports of the head and right arm made by Francesco Carradori

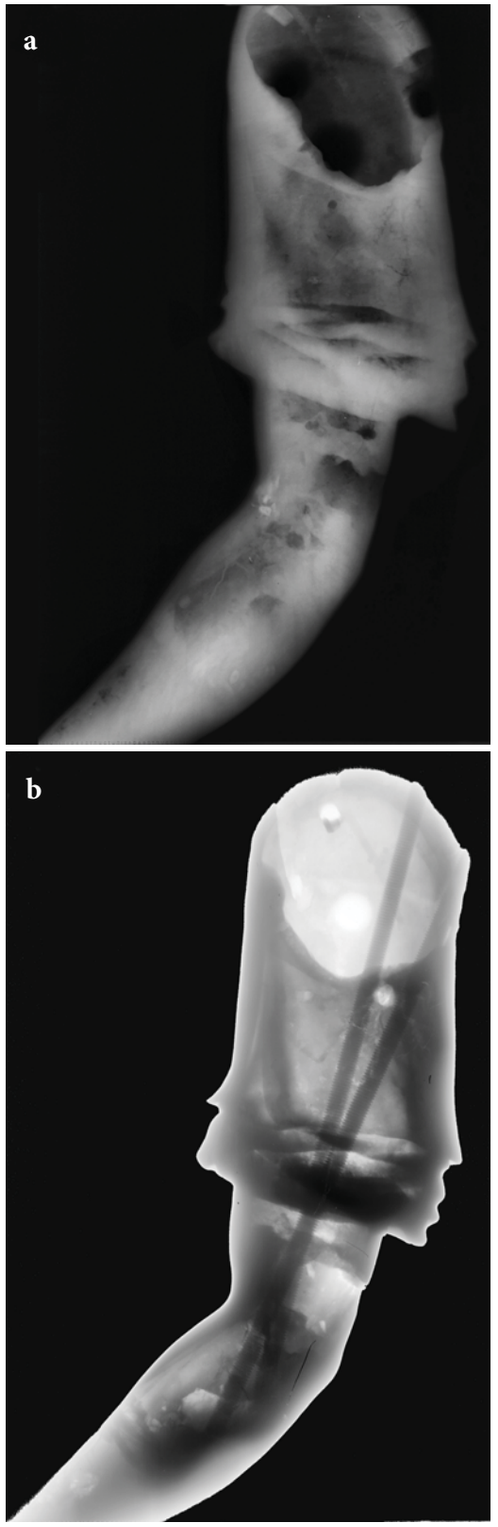
FIGURES 6.16a–c. The Minerva's internal wood support (and Carradori's iron armatures for the head and right arm) and main stucco integration (a–b); thirty-two of the forty-four fixing nails extracted during the dismounting of the sculpture (c)

These screws did not penetrate the internal wood support. Conversely, the two horizontal screws that secure the neck also entered through the upper part of the wood core. The drawing in figure 6.15 precisely documents the shapes and sizes of the two supports made by Carradori. As mentioned above, he also added the part of the snake on the helmet that was missing. This was directly screwed onto the helmet.

The whole sculpture was thus completely dismantled and its original surfaces carefully uncovered. Figures 6.16a–b display the exposed wood support (which was identified as linden wood)[25] with the iron sheets, and figure 6.16c shows thirty-two of the forty-four nails extracted. Fifteen of the nails were fixed through the metal wall, while the remaining twenty-nine were fixed around the edges of the fragments, supporting rather than passing through them.

The right arm added by Carradori was carefully studied in order to interpret the method of its production. Figures 6.17a–b are two radiographic plates made after the arm was dismounted. Figure 6.17a features the arm alone, while figure 6.17b shows it with two lengths of thread rod that had been inserted into the hollow to demonstrate its extent. They indicate that the cavity extends to at least the middle of the forearm. The thickness of the metal wall is highly variable and the inner surface profile differs with respect to the outer one. Furthermore, two round internal thickenings are clearly recognizable in the radiographic plates, just above the elbow and at the middle of the forearm.

All these features indicate that Carradori crafted the right arm in situ on the figure, in order to guarantee a perfect match between his new addition and the ancient shoulder. He then cast



FIGURES 6.17a–b. X-radiographs of the right arm

the arm using a direct lost-wax casting procedure. Its hollowness suggests that the wax was modeled onto a core that was later removed. The arm's textured surface, visible in figure 6.14, was not created post-casting but modeled in the wax. A powdery green color was present upon cleaning of the dark patination, suggesting that even this eighteenth-century addition had undergone natural corrosion.

One more important observation concerns the assembly of the front fragments of the peplos. As displayed in figures 6.16a–b, the wood support was carefully modeled before the metal fragments were fixed on it. In particular, a long vertical groove was hollowed out and four small wood strips were nailed on in order to fit precisely with the main folds of the peplos. Finally, the space between the metal and wood, as well as the spaces between the wood strips, was mostly empty, apart from small quantities of stucco that had entered during past restorations. All the structural features of the Minerva before the recent intervention are summarized in figure 6.18.

I will discuss in more detail below the differences in approach between Carradori's restoration and the previous mounting of the many fragments on the modeled wood shaft. Before doing so, however, I will consider the means by which the Minerva was produced in antiquity.

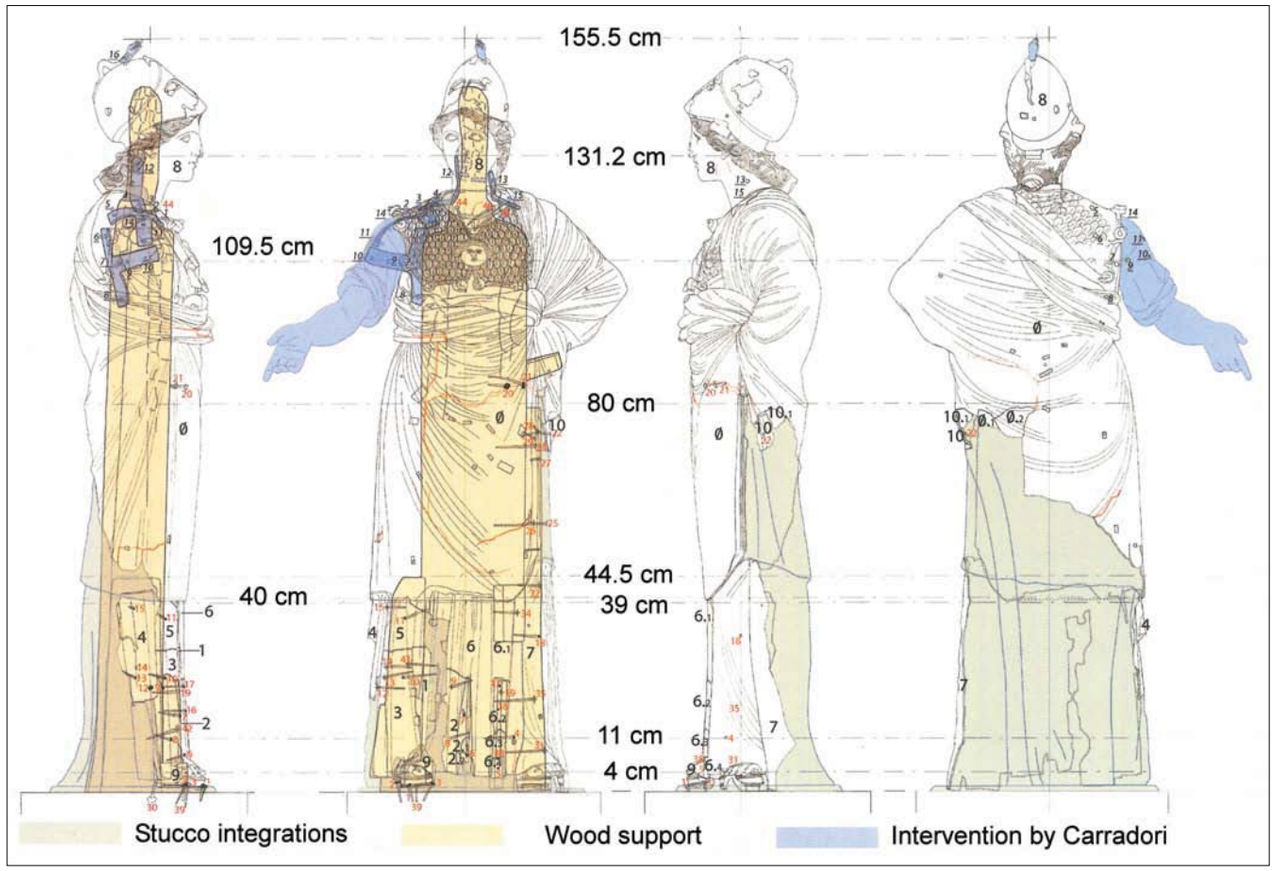


FIGURE 6.18. Plans including all the elements of the Minerva's assembly before the recent restoration.
Fragments: bust, 0, 0.1, 0.2, 10, 10.1; head, 8; peplos, 1, 2, 2.1, 2.2, 3, 4, 5, 6, 6.1, 6.2, 6.3, 6.4, 7, 9
Nails: 1–44. Through holes drilled in the bronze walls: 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 22, 38
Screws: 1–16
Adapted from Marida Risaliti, "Documentazione grafica," in *La Minerva di Arezzo*, ed. Mario Cygielman (Florence, 2008), p. 134

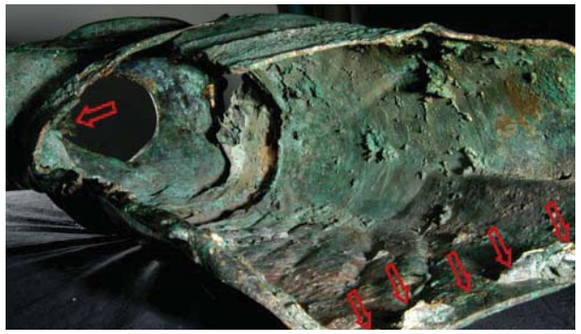


FIGURE 6.19. Inner surface of the bust. Arrows indicate hard brazing zones.

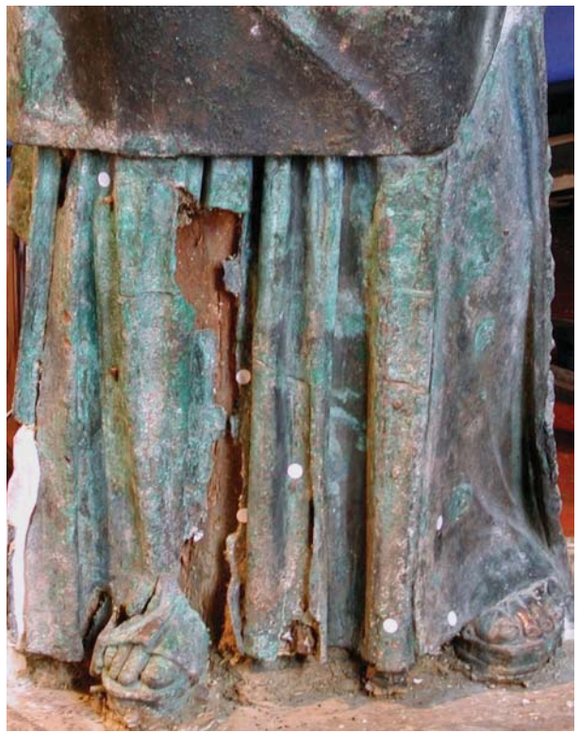


FIGURE 6.20. 2000–2008 project: early phase of intervention on the lower part of the peplos

Interpreting the Processes of Manufacture

Visual observation of the surfaces provided a great amount of information regarding the production of the Minerva. Much was revealed about two fundamental aspects in particular: the assembly of the separately cast pieces, and the preparation of the waxes.

Assembly

As noted, the Minerva consists of twenty ancient parts: head, bust, fourteen fragments composing the peplos from the knee to the feet, and four small fragments of the himation at the level of the upper part of the left buttock (numbered 0.1, 0.2, 10, and 10.1 in figs. 6.13 and 6.18). The height of the statue was about 151 centimeters, and this remained almost unchanged after the reassembly undertaken during the recent treatments. The sculpture is a hollow lost-wax casting, with relatively thin metal walls, the representative thickness of which varies between 2 and 6 millimeters. The total weight of the original fragments is about 49.5 kilograms.

Two hard brazing zones are clearly recognizable on the interior surface of the bust (see arrows in fig. 6.19). These extend to the vicinity of the neckline and the lower margin of the himation at knee level. They suggest that the figure was cast in three separate parts, which were then joined together: the head with the neck; the part between the neck and the knees (fig. 6.19), hereafter referred to as the bust; and the lower part of the sculpture (the drapery of the peplos and the feet shown in fig. 6.20).

Of these three parts, only the head was found to be from a single casting. Copper lips, and eyes (and probably eyelashes) of a nonmetallic material, were likely applied, in accordance with what has been observed for other large Greco-Roman bronzes.[26] It was not possible to confirm whether there was a break along the ring that binds the hair on the nape (which would have implied that a final lock or suchlike is missing); most of the surface of the ring seems to be finished rather than broken.

The peplos and the bust bear evidence of independent castings and metallurgical joining. These casting traces and joins are located on a large part of the band of drapery that extends around the figure's waist and shoulders, as well as on a few fragments of linear drapery below.

The identification of the traces of castings inside the bust is more complex. Particularly evident, however, is the cutting of the wax model at the level of the abdomen and on the back, where the band of drapery would subsequently have been anchored at several points.

Localized castings can be observed on the statue's interior, recognizable thanks to the presence of areas with characteristic oxidized macrodendritic structures produced by rapid cooling in the air. The most obvious is located just below the right armpit, and corresponds to an overhanging of the drapery with deep undercutting (figs. 6.21a–b). Another casting point is located behind the

FIGURES 6.21a–b. Housing area of the right arm (a) and a detail (b) of the corresponding inner surface indicated by the red dot

FIGURE 6.22. Gap in the drapery on the chest, lit from within

drapery. In these two cases, visual observation alone does not clarify whether these are joins or hot patches (that is, ancient repairs of casting flaws using molten bronze). Nonetheless, the joining of separately cast elements is evident. Several areas of the himation are not fully attached to adjoining sections (see the deep undercuts of fig. 6.21a). This is particularly true of the most prominent fold of drapery that runs across the chest (from the left flank and upward to the right), where there are points of connection in the deep recesses of the folds, as well on the surface. To highlight this more clearly, the photograph in figure 6.22 has been taken by lighting the statue from within.

A similar situation can be seen in the drapery on the back. However, the corresponding form of the interior differs from what was seen on the chest. There are at least three or four castings of small quantities of metal that seem to have produced, to some extent, a leveling of the surface. In addition, it seems that at least two of the folds of the drapery have been cast separately and then joined.

Preparation of the Waxes

Visual observation of the interior of the Minerva suggests that the wax model used for casting the himation, peplos, and bust was created by assembling wax sheets. These were made to a preliminary thickness, then cut according to the various dimensions and shapes needed, and subsequently joined. The joins were mostly achieved by applying and spreading a strip of wax along the line of contact between the sheets. Inside the bust, for example, small linear protuberances at the junctions of the wax sheets are visible (fig. 6.23), which would have been produced by flattening the small wax strips along the seams. Some other joins, however, were accomplished simply by blending the sheets' edges with a hot blade. One instance is located on the left flank, where the left hand gathers the folds of the himation. As figure 6.24 shows, the juxtaposition of four wax sheets that had first been modeled forms a prismlike shape. The joins have defined edges, rather than ridges that would have indicated the use of wax strips, leading us to conclude that the edges were blended with a hot blade. Also visible in figure 6.24 is the interior of the left arm. The surface has rounded profiles that follow the folds on the exterior, with several linear creases whose morphology is suggestive of thin wax sheets.

No wax joins are visible in the forearm/hand, whereas the join relative to the drapery folds on the left shoulder is apparent. The entire curvature of the arm within the folds of the himation seems to derive from a single piece of wax that was connected to the body at the convergence of the joins shown in figure 6.24. This observation might lead one to suppose that the wax piece forming the left arm was slush-cast. However, the presence—even if obscured by the oxidation layer—of defined edges; inexplicable protuberances; the direction of the flow of melted wax (orthogonal to the folds, which is anomalous for a slush cast); and fingerprints all argue against this. Further conceptual obstacles to slush casting are noted below.

FIGURE 6.23. Protruberances marking junction of wax sheets

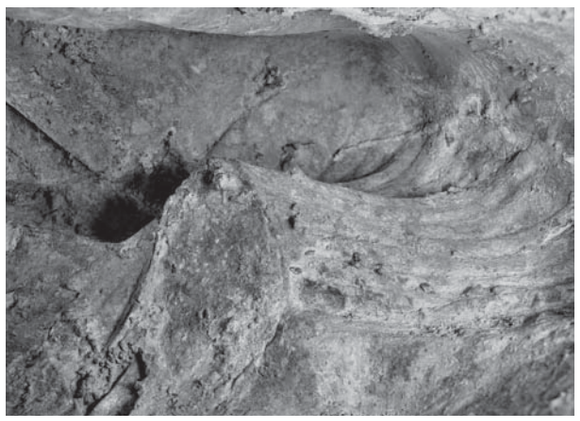


FIGURE 6.24. Juxtaposition of four wax sheets in the area of the left flank and arm

The execution of the drapery of the peplos by assembling wax sheets is evident. Here, the parallelism between the exterior and interior surfaces of the bronze and the regularity of the profile are striking. Even where there are variations in thickness, the morphology is nonetheless reminiscent of the use of sheets. In addition to the regularity of the thickness of the bronze and the presence of seams, the acute angles of the folds of the drapery further support the use of wax sheets. These features would not be apparent if the wax had been slush-cast or applied with a brush.

In many areas the inner surfaces of the peplos and the bust (including the inside of the left arm) have linear grooves that were produced by manipulating the wax with a toothed implement. These grooves have also been noted at and around the wax joins, as, for example, in figure 6.23. Here, the tool was likely used to level the joins and to remove any accidental drips, imprints, or irregularities from the wax sheet.

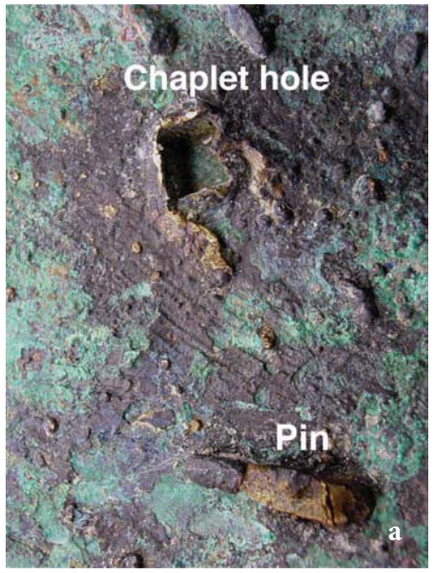
As far as the internal surface of the head is concerned, there are a few traces of manipulation of the wax, most notably the groove from a scraper at the entrance to the neck. There are also undulations and furrows along the pigtail and signs of shaping in the temporal region. The use of wax sheets to create the head does not appear likely, but the morphology of the interior surface also leads us to exclude slush casting.

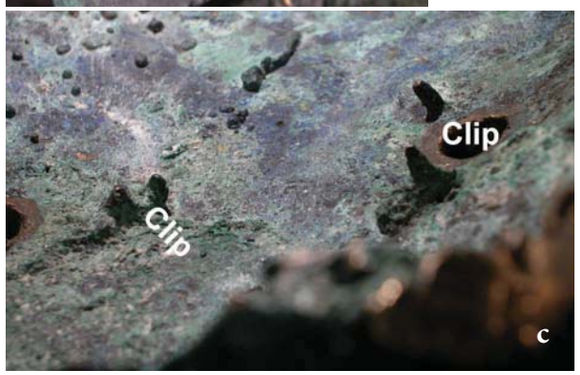
An Unusual Feature

A series of square-sectioned chaplets (mostly closed with metal patches) accord well with what is described in the literature on ancient bronze production. However, strange types of bronze pins and clips were observed in the fragments of the drapery of the peplos and in the upper part of the bust.

The pins, found in the peplos, can be seen in figures 6.25a–b. Long and narrow, they have a circular section with a diameter of about one millimeter and a length that could originally have reached more than five centimeters, considering the protruding features and the thickness of the walls. The clips, found in the bust, have a flattened section, again on the order of a few millimeters, and protrude from the metal wall by only one to two millimeters. (fig. 6.25c).

The most plausible hypothesis is that these metal components were useful in assembling the waxes. They could not have been used to immobilize the core, both because they were too thin or short (those in the bust) and because they were made of bronze (the composition of a pin was measured).[27] In other words, in addition to the wax joins, the assembly of the model required some mechanical connections such as a type of pinning in the lower part and clipping in the upper (though the function of the latter is not immediately identifiable). A good number of these clips can also be recognized on the left arm, above all on the apical line of the shoulder-elbow-hand, which could not have any function in a model formed by slush casting.





FIGURES 6.25a–c. Pins emerging from the inner surfaces of the peplos (a–b) and clips in the shoulder (c)

Radiographic Examination

X-rays taken after the statue was disassembled added further information to the initial radiographic campaign and confirmed and clarified many of the observations presented above. In addition, they demonstrated the joining of separately modeled wax sheets on the left side of the chest. Another important feature emerged from the careful examination of the area inside the right armpit (see figs. 6.21a–b). This zone was interpreted as having been remelted, to allow the corresponding bulge in the himation to be anchored in place. This had been achieved by partially removing some of the core material before joining, to allow for the molten metal to fill the void.

Composition and Microstructures of Alloys

The main alloy of the bust is a binary alloy—89.74 to 90.08 percent copper, 8.84 to 9.99 percent tin, with only traces of lead—and it thus very similar to the so-called classical alloy (90 percent copper, 10 percent tin).[28] The composition of the head and that of the lower part of the peplos coincide: 90.01 percent copper and 9.62 percent tin, and 89.37 percent copper and 9.26 percent tin, respectively. The folds added with heat joins seem to have a slightly higher lead content, though it is difficult to say whether this indicates a difference in alloys, or is simply a result of diffusion or contamination from the corresponding welds. In fact, in the welds, lead is definitely higher: 3.83 percent and 4.8 percent for the join of the head and for that of the lower part, respectively. Notably, Carradori utilized an alloy for the right arm that is very close to the Minerva's. This should be taken into account by scholars who still base technological dating on alloy composition alone.

Metallographic samples displayed varying microstructures indicating areas of unaltered casting, such as a metal core sample, MF_2, taken from the lumbar area. Others indicate annealing or heating for joining, such as the MF_1 sample, which came from the break of the drapery on the left side: while remaining for the most part dendritic, it had evident recrystallization nuclei, indicating moderate heating that can be associated with the joining process.

Conclusions

Ancient Manufacture

There seems to be little to no evidence that the statue was produced with the indirect lost-wax technique. If the figure were to have been created from molds, we would not expect to find the confluence of wax sheets at the prismlike feature evident in figure 6.24, or the uniform thickness throughout the multiple undulations of the drapery and breasts. Nor would we anticipate the anomaly of dividing the essentially flat parts (on both the front and the back) below the abdominal area. Moreover, the application of bronze clips in the upper part of the bust, and pins in the peplos (see figs. 6.25a–c), cannot be reconciled with any known production contexts.

FIGURE 6.26. Waxing of fabric by the conservator Stefano Sarri

FIGURE 6.27. Direct modeling of the missing parts of the peplos and himation

Seen from within, the lower section of the figure displays folds that flow in a regular manner, without joins that could be related to piece casting, and with acute angles, which would be difficult to reproduce in a mold. If the lower part were created using the indirect method, it should present traces of numerous molding plugs, or clear evidence of slush casting of the wax. But this is not so. Finally, the head shows a heavy manipulation of the wax and a probable joining line on the temporal arc within the interior. This opens up the possibility that it may have been composed from at least two pieces of wax modeled or molded separately.

All this leads me to conclude that the Minerva is not a reproduction of an earlier model. The evidence presented above also supports its stylistic dating to the pre-Imperial period.[29] Its wax model was obtained by utilizing a technique that cannot be defined as either direct or indirect. The wax sheets known to have been used for the lower part of the bust would have been difficult to manipulate in a mold, and would have been more easily worked in the positive. For the upper part of the bust, and in particular for the drapery around the left arm, I conclude that the modeling likely started from a composition made of fabric, which produced the extraordinarily realistic rendering. The drapery was probably modeled around a temporary support, which would have been given a minimum of plasticity with wax. The drapery folds seem to have been realized by adapting the thin material to the sculptor's design, attaching it gently to the support using small metal clips. Subsequently the wax was brought to a desired thickness by working it with a brush on the outer side or on both sides. To begin with fabric itself would have been the best way for the sculptor to denote the natural undulations of the drapery. The process proved suitable for modeling the drapery of the peplos during the recent conservation and reassembly undertaken at the Centro di Restauro of the Soprintendenza per i Beni Archeologici della Toscana (figs. 6.26, 6.27). After the surface was finished, the integration was cast in carbon composite material (see figs. 6.1a–b).

The missing bronze parts that would have been pertinent to the solid metal structure of the statue have, along with the snake on the helmet, been reconstructed as part of the recent conservation project (see figs. 6.1a-b). Any other elements were likely to have been separate parts and were probably made of various materials. This is true particularly for the right arm, with its peculiar housing (see fig. 6.21a) and the strange large tortile pin on the inside (see fig. 6.21b). The arm could have been movable and the pin may have served as a sort of hook for blocking the arm's movement. Similarly, if there had been a continuation to the present ending of the hair, this was perhaps an independent accessory. In future archaeological and stylistic reexaminations of the Minerva these important features, which could assist in refining the attribution and dating of this important masterpiece, should be taken into account.

Historical Restorations

According to the technical examination and the archival information described above, three distinct interventions can be hypothesized for the restoration of the Minerva of Arezzo.

The first was likely carried out soon after its discovery in order to assemble the many fragments on the linden support, which was suitably prepared for fitting them with nails. In the second campaign, carried out between the end of the seventeenth and the first decades of eighteenth century, the missing right arm was integrated in plaster. Finally, in 1785 Carradori cast in bronze a new right arm and the then-missing portion of the snake on the helmet.

We cannot know all the operations in detail, but one hypothesis can be formulated on the basis of the available data about the two earlier interventions. The careful carving of the wood support in correspondence to the lower part of the peplos and the addition of strips on it in order to fit the metal fragments (see figs. 6.16a–b), along with the lack of a stucco preparation beneath the fragments, lead us to propose that the stucco integrations might have been applied later—perhaps during the second restoration phase, together with the plaster right arm. In other words, at the time of Cosimo I (i.e., at the first intervention), the Minerva could simply have been assembled from its surviving ancient parts alone. The reconstruction could have been carried out only with nails and perhaps a small amount of tar.[30] All this is congruent with the data collected, though no direct evidence has been found.

It is worth nothing that none of the restoration interventions discussed here involved foundry techniques, such as casting-on or heat-joining additions. I believe this testifies to the importance that the Florentine antiquarian tradition attributed to what was already recognized during the Renaissance as an ancient masterpiece. Notably, the first intervention—in which the fragments were assembled on the internal wood support—is much more in line with a modern conservation approach (based on the general principle of the preservation of the artwork's authenticity) than the later integrations in the eighteenth century.

We know from archival data that the missing arm was not added in the sixteenth-century restoration. This accords with what is emerging from recent studies of bronze figurines from the Medici–Lorraine antiquities collections.[31] These findings seem to confirm from the material-analysis standpoint what is known historically about the "taste for the fragment"[32] that characterizes the rediscovery of ancient art during the Renaissance and Mannerist periods.

On the basis of previous considerations, we can reasonably hypothesize that the initial form of the Minerva after its rediscovery was to some extent similar to its appearance today, following the recent conservation—without the arm and bit of snake, and perhaps without the stucco integrations of the lower part.

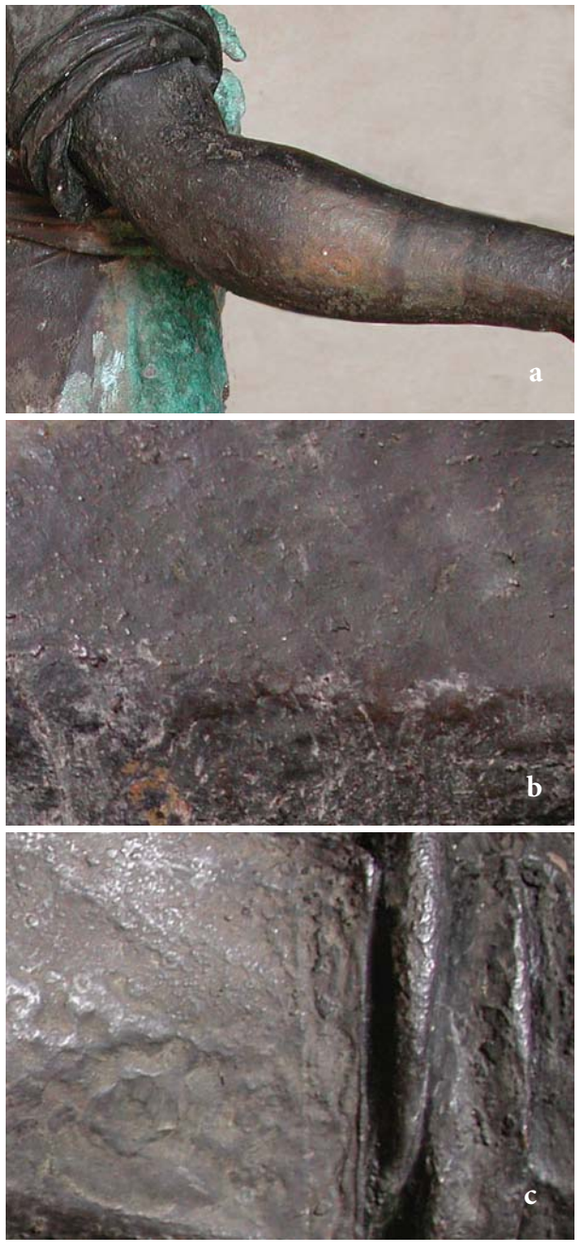
That an intervention carried out in the sixteenth century was so philologically correct and respectful of even minute fragments is interesting and surprising, and it could be seen as the embryonic stage for the modern approach to the conservation of cultural heritage. In subsequent centuries a tendency to integrate missing parts of archaeological finds (or what was considered missing) is made evident not only by large bronzes such as the Minerva and the Chimaera of Arezzo but also by a number of statuettes in Florence's Museo Archeologico Nazionale.[33]

With the crafting of the right arm of the Minerva and the tail of the Chimaera, Carradori made two of the many pastiches produced between the seventeenth and nineteenth centuries. That said, it seems he did not intervene with parts that had previously been restored, such as the lower part of the figure. He mounted the right arm without exploiting the internal wood support, and used the support for improving the stability of the head (see fig. 6.15).

Several corroborating historical documents as well as material data allow us to associate a bronzelike patination with the eighteenth-century restoration.[34] It is not possible to say definitively that the earlier intervention(s) included a similar application. However, the presence of at least two intentional brown layers (see figs. 6.7a–b, 6.8a–b) makes this a possibility, and would be compatible with the taste of that period. Most probably, the intervention by Carradori also provided the occasion for an overall coating of the statue, as he had to apply a patination to the new arm that he had crafted. Such a conclusion is supported by two documents, dated prior to 1785,[35] in which the bad condition of the Minerva's outer surface is noted. These documents may also testify to the presence of a previously applied dark coating.

A manuscript by Luigi Lanzi, of uncertain date but before 1783, states: "Corridor. A Minerva of natural proportions, dressed with a long peplos without sleeves . . . they say it had a snake, of which only a fragment remains, in front of which there is an owl or similar bird, in relief on the helmet. . . . The right arm is replaced and other parts of the robes are consumed and appear touched by fire."[36] The final observation is also included in the above-mentioned inventory note of 1783: "A bronze Minerva, which has suffered fire, without the right arm."[37] I suggest—as a working hypothesis for future studies—that in both cases the writers could have confused the dark areas in which a previous patination with significant carbon-black content was still preserved with the effects of fire.

Finally, let us consider in more detail the right arm integrated by Carradori in 1785 in order to better understand his manufacturing processes. As already mentioned, I believe he used a direct method, that is, shaping the wax for casting on a preliminarily prepared core structure.[38] This is supported by radiographic examination (see figs. 6.17a–b) as well as by the morphology of the bronze surface (fig. 6.28a). The right arm has a variable texture, from almost flat (fig. 6.28b) to very rough (fig. 6.28c). The softness of the details is consistent with their having been added in



FIGURES 6.28 a–c. Right arm (a) and details of the right arm (b, c)

the wax, and there is no evidence that the marks were produced by mechanical tools after casting. This suggests that Carradori fashioned the arm with the intent of harmonizing his work with the irregular surface of the ancient masterpiece.

Besides being a sculptor and restorer, Carradori was an instructor of sculpture, between 1786 and 1821, at Florence's Accademia di Belle Arti. He also wrote a brief handbook for his students (*Istruzione elementare per gli studiosi della scultura*, 1802),[39] which is a valuable source of information on artists' techniques before the industrial era. Unfortunately, this book does not contain any specific reference to the restoration carried out on the Minerva and the Chimaera, but it does include some useful information about Carradori's ethical and technical approaches to the restoration of ancient statues. He writes that after cleaning the figure, the restorer should think about the possible shape of a missing sculptural element, making a drawing to see if it will be successful.[40] In particular, the sculptor describes clay modeling on a marble sculpture; the same can be applied to bronze statues, where wax modeling could represent a better choice. Carradori considers the latter suitable for "sketches of ideas, architectural ornamentation, works in silver, or any other work of this nature"[41] This conceptual and technical approach is in keeping with his direct casting in bronze of the Minerva's right arm.

The technical descriptions and conclusions reported here were the result of my productive interaction with the staff of the Centro di Restauro of the Soprintendenza per i Beni Archeologici della Toscana, the institution in charge of the conservation work on the Minerva of Arezzo. In particular, I thank my close collaborator Marcello Miccio for many useful discussions; the conservators Renzo Giachetti, Manuela Nistri, and Stefano Sarri, the designer Marida Risaliti, and the radiographer Roberto Pecchioli for their kind and enthusiastic collaboration; and last but not least, Mario Iozzo and Mario Cygielman for having entrusted me with the present study.

1 See M. Cristofani, "Per una storia del collezionismo archeologico nella Toscana Granducale: I grandi bronzi," *Prospettiva* 17 (1979), pp. 4–15; A. Cherici, "Alcuni appunti di monumenti archeologici di provenienza aretina," *Atti e memorie dell'Accademia Petrarca di Lettere, Arti e Scienze* 48 (1986), pp. 3–15; L. Beschi, "Atena di Arezzo," in *Capolavori e restauri*, exh. cat. (Florence: Cantini, 1986), pp. 255–56; M. Cygielman, "La Minerva di Arezzo: Il restauro," in *Etruschi nel tempo: I ritrovamenti di Arezzo dal '500 ad oggi*, ed. S. Vilucchi and P. Zamarchi Grassi, exh. cat. (Florence: Nuova Grafica Fiorentina, 2001), pp. 67–73; V. Saladino, "La Minerva di Arezzo: Vicende collezionistiche, iconografia e stile," in *La Minerva di Arezzo,* ed. M. Cygielman, exh. cat. (Florence: Nuova Grafica Fiorentina, 2008), pp. 13–29.

2 See Saladino, "Minerva di Arezzo" (note 1).

3 G. De Tommaso, "La Minerva da Palazzo Vecchio al Museo Archeologico," in *La Minerva di Arezzo*, ed. M. Cygielman (Florence, 2010), pp. 47–49.

4 Inventory of 1676, no. 3; inventory of 1704, no. 2920, cited in Cristofani, "Storia del collezionismo archeologico" (note 1), p. 11.

5 Inventory of 1769, no. 186, cited in Cristofani, "Storia del collezionismo archeologico" (note 1), p. 11.

6 A. F. Gori, *Museum Etruscum*, vol. 2 (Florence, 1737), pl. XVIII.

7 See Cherici, "Monumenti archeologici" (note 1).

8 J. J. Winckelmann, *History of the Art of Antiquity*, trans. Harry Francis Malgrave (Los Angeles, 2006), p. 164.

9 See Cristofani, "Storia del collezionismo archeologico" (note 1), p. 4.

10 V. Saladino, "Vicende e stile della Minerva di Arezzo," in *La Minerva di Arezzo*, ed. M. Cygielmann (Florence, 2010), p. 30.

11 Beschi, "Atena di Arezzo" (note 1).

12 Cherici,"Monumenti archeologici" (note 1).

13 Cherici,"Monumenti archeologici" (note 1), p. 12

14 Cherici also states that evidence of an extensive fire was found at this archaeological site. He mentions traces of burning on the Minerva, as well as on a set of figurines found in a lararium of the Roman domus—apparently an assumption by him, to provide important material support to his thesis. However, during the recent restoration, no secure traces of burnt material were found on the Minerva.

15 Cherici, "Monumenti archeologici" (note 1), p. 12.

16 Beschi, "Atena di Arezzo" (note 1), p. 255; M. Cygielman, "La Minerva di Arezzo," in *La Minerva di Arezzo*, ed. M. Cygielman, exh. cat. (Florence: Nuova Grafica Fiorentina, 2008), p. 10.

17 G. Maetzke, "La Minerva di Arezzo," in *Etruschi nel tempo: I ritrovamenti di Arezzo dal '500 ad oggi*, ed. S. Vilucchi and P. Zamarchi Grassi, exh. cat. (Florence: Nuova Grafica Fiorentina, 2001), p. 65.

18 Saladino, "Minerva di Arezzo" (note 1); Cygielman, "Minerva di Arezzo" (note 16).

19 G. Giachi and P. Pallecchi, "Materiali di integrazione e di finitura superficiale," in *La Minerva di Arezzo*, ed. M. Cygielman, exh. cat. (Florence: Nuova Grafica Fiorentina, 2008), pp. 169–73.

20 On modern patinations, see Luisa Fucito in this volume.

21 S. Siano et al., "The *Quattro Santi Coronati* by Nanni di Banco: Cleaning of the Gilded Decorations," *Journal of Cultural Heritage* 4, supp. 1 (January 2003), pp. 123–28.

22 S. Siano, M. L. Nicolai, and S. Porcinai, "Verrocchio's David: Characterization and Conservation Treatments," in *Verrocchio's David Restored*, G. M. Radke et al., eds., exh. cat. (Atlanta: High Museum of Art, 2003), pp. 97–109.

23 S. Siano et al., "David di Donatello: Indagine sul procedimento esecutivo," in *Donatello: Il David restaurato*, ed. B. Paolozzi Strozzi, exh. cat. (Florence: Firenze Musei, 2008), pp. 168–83.

24 See A. Giusti et al., "Documentary and Analytical Analogies in the Study of Patinas of the 'Quattro Santi Coronati' by Nanni di Banco," in *Proceedings of the Ninth International Congress on Deterioration and Conservation of Stone*, ed. V. Fassina (Amsterdam, 2000), pp. 671–78; A. Giusti, "Ghiberti's Gold: Restoration of the Gates of Paradise," in *The Gates of Paradise: Lorenzo Ghiberti's Renaissance Masterpiece*, ed. G. M. Radke, exh. cat. (Atlanta: High Museum of Art, 2007), p. 100.

25 G. Giachi and S. Lazzeri, "Il sostegno centrale," in *La Minerva di Arezzo*, ed. M. Cygielman, exh. cat. (Florence: Nuova Grafica Fiorentina, 2008), p. 173.

26 See, for example, E. Formigli, "La tecnica di costruzione delle statue di Riace," in "Due Bronzi da Riace," ed. L.V. Borrelli and P. Pelagatti, Serie speciale, *Bollettino d'arte* 3 (Rome, 1984), vol. 1, pp. 107–42.

27 Both pins in the peplos were found to be annealed. One pin (MF_7) has a completely different microstructure from that of the metal that incorporates it. It was found to have been successively hammered and annealed, confirming that such pins were utilized for the construction of the waxes and were not casting features derived from a replacement of organic materials, the filling of the holes in the core, or anything comparable. Their composition is similar to that of the alloy associated with the joins described below.

28 The chemical analysis of the alloys was carried out on a series of burr samples and metallic fragments (MP and MF in fig. 6.4). Most of the samples were taken from the bust, in order to identify the main alloy, verify the possible compositional differences of separately cast parts, and characterize the filler used for the joins and the composition of possible recastings.

29 The study of the Minerva also included the analysis of a singular possible black ancient patination made of tenorite, which came to light on large areas of the figure. I will address this in another study, but I can say that its composition and intentionality strengthen my thesis.

30 Some amounts of tar were found in the region of the neck of the peplos.

31 See S. Siano et al., "Authentication of Copper Alloy Statuettes: Florence's Antiquarian Collections," in *A Quest for Authenticity,* M. L. Vitobello and T. Rehren eds., (London, 2009), pp. 105–18.

32 Archaeological finds were exhibited almost as found, without integrating the missing parts. This "taste for the fragment" or for "the relic" is further evidenced by the production of incomplete counterfeit objects of ancient style, particularly small figurines without arms or with broken legs, and headless busts with broken arms.

33 See Siano et al., "Copper Alloy Statuettes" (note 31).

34 See Giusti et al., "Analogies in the Study of Patinas" (note 24); Siano, Nicolai, and Porcinai, "Verrocchio's David" (note 22); Giusti, "Ghiberti's Gold" (note 24), pp. 98–109.

35 Saladino, "Minerva di Arezzo" (note 1), p. 26.

36 Quoted in Saladino, "Minerva di Arezzo" (note 1), p. 26.

37 Quoted in Saladino, "Minerva di Arezzo" (note 1), p. 27.

38 One more archival document mentions "another mold of the model used for remaking in bronze the arm of the statue of the Etruscan Minerva" (quoted in Saladino, "Minerva di Arezzo" [note 1], p. 27). this reference need not refute the use of a direct method, since the mold mentioned could have

been cast on the wax model for safety reasons (that is, for replicating the metal casting in case of irreparable damage during the foundry operations), as well as for documentation or educational purposes.

39 F. Carradori, *Elementary Instructions for Students of Sculpture*, trans. M. K. Auvinen (Los Angeles, 2002).

40 Carradori, *Elementary Instructions* (note 39), p. 40 (article 11).

41 Carradori, *Elementary Instructions* (note 39), p. 25 (article 4).

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7 | The Child with a Bulla in the Louvre
History of the Reconstruction and Restoration of an Ancient Bronze

Sophie Descamps-Lequime, Benoît Mille, Dominique Robcis, and Nathalie Balcar

FIGURES 7.1a–b. The Child with a Bulla, 2nd century B.C. Bronze, H. 86 cm (33⅞ in.). Paris, Musée du Louvre (inv. Br 17). The statue is shown after conservation in 2010.

Introduction

As is demonstrated in the essays throughout this volume, the study of an ancient bronze statue must be multidisciplinary. Before we can begin to consider the style and dating of a work, it is essential to understand how it was originally produced and possibly reconstructed and restored. This preliminary consideration can be achieved only by making use of archival documents as well as technical and scientific analyses, and that involves the participation of curators, archaeometallurgists, chemists, radiologists, and conservators.

Our study concerns the Child with a Bulla, a statue now in the Department of Greek, Etruscan, and Roman Antiquities of the Musée du Louvre (figs. 7.1a–b). The bronze first appeared in Paris in 1809, when it was purchased by Louis-Joseph Maurice at the sale of the collection of Pierre-Nicolas Van Hoorn van Vlooswyck. A few years later, in 1825, it was acquired by King Charles X for the Louvre, from the collection of Edmé-Antoine Durand.[1]

The statue, which is slightly smaller than life-size, is that of a young boy clad in a toga worn over a tunic, with a bulla strung around his neck. The bulla was the protective amulet given by fathers to their sons on the *dies lustricus*. The decoration of the boy's bulla shows that it emulates metallic examples. Its association with the toga praetexta—a garment worn by boys under the age of fourteen—indicates clearly that the bronze sculpture was intended to represent the son of a Roman patrician or knight.

The bronze as it appears today is not ancient in its entirety. Twentieth-century scholars had already stressed stylistic and typological discrepancies between the different parts of the statue, and at various points in time it was suspected that the arms, the legs, and even the head were modern.[2] It was noted, for example, that the two feet differed stylistically (fig. 7.2) and that the construction of the folds behind the left leg was erroneous (fig. 7.3). These doubts about the authenticity of some parts of the statue were reinforced following the examination of fairly recent photographs kept in the Louvre's file on the bronze or already published. The oldest of these

FIGURE 7.2. The ancient right foot and the restored left foot (first phase of restoration: late sixteenth or seventeenth century)

FIGURE 7.3. The erroneous construction of the folds behind the modern left leg

photographs was taken between 1898 and 1902 (fig. 7.4), and reproduced in 1935–1936[3] and in 1944.[4] In this photograph, the right arm, which was subsequently shown to be modern, was still in place. It was removed between 1944 and 1964 (fig. 7.5).[5]

A multidisciplinary study of the statue, including the use of radiography and analyses of the elemental composition of the different copper alloys, was thus undertaken in 2005 in order to produce a cartographic representation of the statue that would show the exact location of the ancient fragments and the modern additions. This cartography was complemented by technical observations and compared with historical data. Our study allowed us to identify three major restoration phases, the first two of which were carried out before 1809, and the third between 1809 and 1820. The initial results of the study were published in 2008,[6] and the conservation of the statue completed in 2010. This paper outlines the deeper understanding we have gained from the additional research conducted over the last three years concerning the third phase of restoration as well as the more minor interventions that took place during the twentieth century.

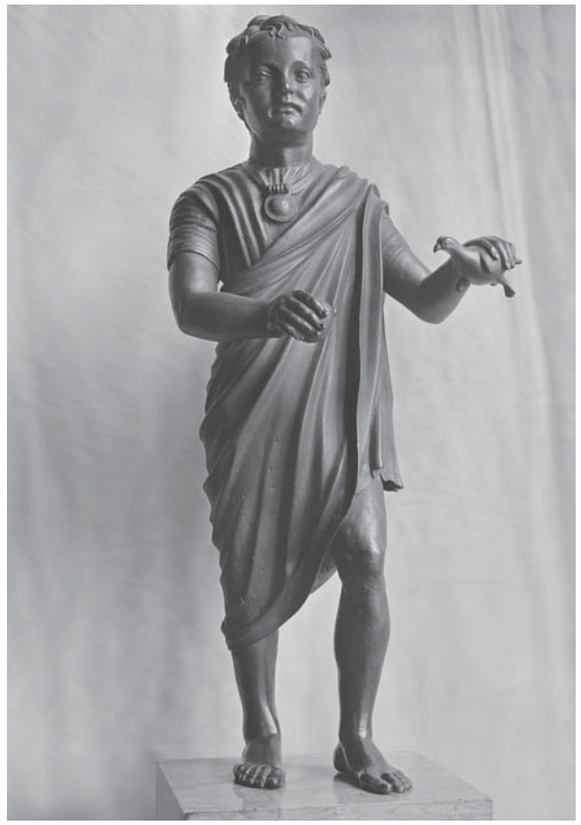

FIGURE 7.4. The Child with a Bulla: photograph taken between 1898 and 1902

FIGURE 7.5. The Child with a Bulla: photograph taken in 1964

FIGURE 7.6. The Child's head photographed in 1975. It was sloping slightly further back after the restoration that took place between 1944 and 1964.

Identifying the Historical Restorations

In his essay on Roman children wearing the toga praetexta, published in 1985, Hans Gabelmann convinced most scholars that the head of the Child with a Bulla was ancient.[7] He demonstrated that it was stylistically close to terracotta votive offerings produced in southern Etruria around the middle, or in the third quarter, of the second century B.C., under Hellenistic Pergamene influences, and that it was in particular very similar to the head of a young boy found at Tarquinia.[8] He noted that the two heads were constructed in the same way, with a large forehead, arched eyebrows, chubby cheeks, and a slightly open mouth (fig. 7.6).[9] Since Gabelmann's important study, the statue has generally been considered to be a Republican portrait of a young boy from one of the highest classes of Romanized Etruscan society, and a work produced during the third quarter of the second century B.C. and dedicated in the sanctuary of a Roman colony in central Italy.

Inductively coupled plasma-atomic emission spectroscopy analyses of the samples taken for elemental composition confirmed the authenticity of the head and identified four different alloys in the figure (fig. 7.7). Three are described here; the fourth, in a cylinder driven into the neck, is discussed following our findings about the earlier phases of the restoration.

FIGURE 7.7. Cartographic representation of the statue: the different copper alloys. Gray: the ancient leaded bronze. Green: the quaternary alloy of the first phase of restoration (late sixteenth or seventeenth century). Pink: the leaded brass of the second phase of restoration (eighteenth century). Yellow dashed line: the leaded brass used to make a cylinder that was inserted in the neck during the restoration carried out between 1944 and 1964

- High-lead bronze (3.7–5.6% tin; 17–23% lead; less than 0.001% zinc)
- Quaternary alloy, copper-lead-tin-zinc (3.3% tin; 13% lead; 3.9% zinc)
- Low-lead brass (0.9–1.6% tin; 3.7–4.6% lead; 16–19% zinc)
- Low-lead brass (0.03% tin; 4% lead; 26% zinc)

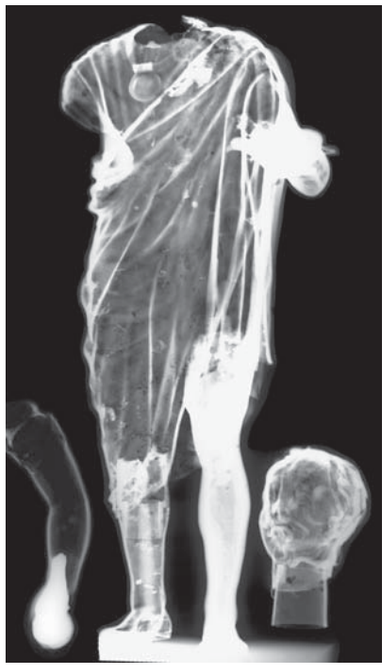

FIGURE 7.8. X-rays (front): right arm, body, head

FIGURE 7.9. Green: the erroneous construction of the folds behind the modern left leg (first phase of restoration). Pink: the modern addition at the top of the calf of the right leg (second phase of restoration). Blue lines: soldering with a lead-tin alloy

The ancient copper alloy (3.7–5.6 percent tin, 17–23 percent lead) present in the head is also found in the body clad in the toga, the left arm with the dove, and the calf and foot of the right leg.

The left leg is a quarternary alloy (3.3 percent tin, 13 percent lead, 3.9 percent zinc). It was cast separately and is a restoration. Technically distinct from the ancient bronze, the level of workmanship is far inferior. X-rays (fig. 7.8) show that whereas the ancient bronze has thin, regular walls that follow the shape and the outline of the statue—which confirms that the statue was executed by the indirect lost-wax casting process—the restored leg, though a hollow cast as well, has thick, uneven walls.

The third copper alloy—brass with a larger amount of zinc than the second alloy (0.9–1.6 percent tin, 3.7–4.6 percent lead, 16–19 percent zinc)—was found in the right arm holding a ball or piece of fruit, a small plaque at the neck opening at the chest (not marked in fig. 7.7), a patch on the left shoulder, the top of the right leg, drapery repairs above the left calf and above the right tibia, and the heel pad under the right foot. This heel pad, which had been added to balance the right leg with the left, provided us with a clue for determining the relative chronology of the two first phases of restoration.

The left leg, including the erroneous fold behind the leg, was added first (fig. 7.9). Surface analyses by particle induced X-ray emission showed that it was joined to the body by means of soldering with an alloy of lead and tin. A brownish patina was then applied to the entire statue (fig. 7.10). Given the mannered style of the elongated left foot and toes, we suggest that this first phase of the restoration should be placed at the end of the sixteenth century or during the seventeenth century.

The second phase could have occurred much later, possibly during the eighteenth century, a period in which the plump little right hand would not have been out of place stylistically (fig. 7.11). During this restoration, the calf of the right leg was raised and completed with a modern addition at the top of the leg (compare fig. 7.9 to fig. 7.3). It would seem that the ancient right leg had been attached to the drapery higher up during the earlier phase of restoration. Had it been too damaged to be left like this? The presence of the modern left leg meant that a new restoration had to be carried out. To attach the additional part to the original calf of the leg, the restorer used a technique that is known to have been employed in the Royal Foundry at Portici under Camillo Paderni, and that can be observed, for example, on the statue of Augustus discovered in 1741 at Herculaneum.[10] To avoid brazing, small plates were cast individually so that they would fit inside perfectly and so that the two separate parts could be held together with rivets or screws. A plaster, clay, or wax print was taken from the inside so that, by means of a casting process in the foundry, a bronze plate that fitted exactly along the interior could be obtained (the plate in the Child's leg shows a slight elevation that perfectly follows the surface). This plate is

FIGURE 7.10. The brownish patina on the left leg (first phase of restoration)

FIGURE 7.11. The modern right arm (second phase of restoration)

FIGURE 7.12. Endoscopic examination of the join of the modern addition to the right leg. The bronze plate, now twisted, with the hole for a thread screw is clearly visible (second phase of restoration).

FIGURE 7.13. A patch across a crack in the drapery, between the neck and the left shoulder (second phase of restoration)

now twisted, but the hole for a threaded screw is visible (fig. 7.12). Another possibility would have been to pour the metal directly into the leg, but this was not the technique used here.

Edilberto Formigli observed a number of rectangular patches placed across cracks on bronzes—for example, those on the statue of Livia discovered in the theater of Herculaneum in 1739. These patches were mostly thought to date from the nineteenth century.[11] However, if we are right in thinking that the second restoration of the Child with a Bulla was carried out during the eighteenth century, the practice of using patches across cracks (fig. 7.13) should also be attested for this earlier period.

Interpretation and Discussion

It is possible that the first restorer had a famous model in mind when he restored the left leg and gave the statue of the Child a particular stance, with the knee slightly bent under the drapery and the foot slightly advanced**.** Of the few ancient bronze statues well known at the end of the sixteenth century or during the seventeenth century, the statue of the Arringatore (Florence, Museo Archeologico Nazionale), most probably discovered in 1566 at Pila, southeast of Perugia, and acquired a few days later by Cosimo I de' Medici, is of greatest importance.[12]

Comparison of the Child with the Arringatore, and with Etruscan votive offerings from southern Etruria, points to a common origin in the region of Lake Trasimeno. It is therefore tempting to suggest that the Louvre bronze was also found in this vicinity and that the first two restorations were carried out in Italy. Another clue could strengthen this hypothesis.

Van Hoorn van Vlooswyck, the first owner of the Child with a Bulla, was known for his extensive collection of engraved intaglios and precious stones, ancient and modern bronze figures and vases, and a large number of works made in many different kinds of stone. He was a member not only of the Royal Academy of Antiquities in Kassel but also—and it is this which is important for our topic—of the antiquarian society of Cortona, the Accademia Etrusca.[13] This society, founded in 1726, was a magnet for Italian and European scholars and connoisseurs during the eighteenth century.[14] Cortona is close to Lake Trasimeno and Perugia, so it is possible that Van Hoorn heard about the Child with a Bulla when he was at the academy. This hypothesis of a Lake Trasimeno–area findspot for the Child with a Bulla should be taken seriously. A bronze statuette of a child or an Eros, represented naked except for the bulla around his neck, holding a bird in his left hand, and with the same stance as the Louvre bronze, was in the Corazzi collection that was once housed in Cortona.[15]

The Louvre bronze, the first on the list of works of art in the Van Hoorn sale catalogue, was described as the "statue of a young man, holding two birds, wearing the toga; thirty-two inches high, in five fragments."[16] We can infer from this description that although it had previously

FIGURE 7.14. Evidence of a violent shock at the back of the tunic, under the nape, where the metal has been ripped off (after the second phase of restoration); on the right shoulder, a fixing hole from the second phase of restoration filled with a mixture of paraffin and beeswax between 1944 and 1964

FIGURE 7.15. Fixing holes: the metal has been ripped off (after the second phase of restoration) near the larger hole (the former attachment of the modern right forearm). The smaller hole belongs to the third phase of restoration, which took place between 1809 and 1820.

been restored twice, the statue was in parts when it was sold in 1809. The five fragments were necessarily the head, the body with the left arm, the right arm, and the two legs. Had the statue been seriously damaged by accident, or had it been intentionally dismembered? As noted above, the small cast plate, which was inserted in the right leg during the second phase of restoration, and which appeared to have been twisted, indicates that something extremely violent had happened to the statue. Other evidence that the bronze statue had suffered a violent shock can be observed at the back of the tunic, under the nape, and on a horizontal fold of drapery, around the former attachment of the right forearm, where, in both cases, the metal had been ripped off (figs. 7.14, 7.15).

We know that when the Child with a Bulla was acquired by the Louvre in 1825 from the Durand collection, it had already been restored again, since in the inventory recorded in 1824 there is no mention of any damage to the bronze, which was described as a "young Roman knight wearing the toga with a bulla on the chest and holding out a piece of fruit and a bird."[17] The period during which the third restoration took place can be narrowed down even more. It most probably occurred between 1809 and 1820.

One of the copies of the Van Hoorn collection sale catalogue contains information about the buyers written by an anonymous hand. We learn from this copy that the person who purchased the Child with a Bulla in 1809 was a certain Maurice.[18] Who was this man who did not hesitate to buy a statue in five fragments? As we shall see, he was well acquainted with a number of skilled craftsmen and artists who would have been able to restore the statue for him.

Louis-Joseph Maurice was a painter and a collector.[19] He died in May 1820. He worked first as a lawyer before turning his attention to the study of drawing and painting. In 1758—he was twenty-eight years old—he went to Saint Petersburg and later to Moscow. He became first painter for the empress Elizabeth of Russia, and afterward for Catherine the Great (we know that he organized the celebrations of the coronation of Catherine). In 1779 he traveled throughout Italy, visiting several towns before arriving in Naples. He made a considerable number of drawings, and decided to start a collection of objects made from the rarest varieties of marble. His reason for doing this was that he planned, on his return to Paris, and together with other artists, to create reduced models of those ancient monuments he had seen and drawn during his journey. Those artisans who worked for him included a certain Bercari, who executed the models, and François Raimond and Jean-Baptiste-Maximilien Delafontaine, who were in charge of the gilded and chiseled bronzes.[20] We know that such works, in various kinds of rare marble and mounted with gilded and chiseled bronzes, were created for the decoration of Queen Marie-Antoinette's private apartments.

In the wake of the French Revolution, a part of the Maurice collection was sold. The rest was sent to London for safekeeping and returned to Paris a few years later. The collection was

recomposed during the first decades of the nineteenth century, and then dispersed in a sale that began on November 8, 1820, and lasted for several days. Since no mention of the Child with a Bulla is made in the sale catalogue, it is most probable that the statue had already been sold (to Durand?). The first item described in the catalogue, and certainly the one considered to be the masterpiece of the collection at that time, was a large serpentine cup. The vase was created under Maurice's direction, but mounted on a base adorned with gilded bronze reliefs and Egyptian figures only after his death—thus between May and the beginning of November 1820—by M. Delafontaine fils[21] (that is, Pierre-Maximilien Delafontaine). We can therefore conclude that the Maurice family was still in touch with the Delafontaine manufacturers.

Pierre-Maximilien Delafontaine[22] started out as a painter, but became a bronze founder in 1802. We know that in 1807 he was already working with his father, Jean-Baptiste-Maximilien: it was, for example, Pierre-Maximilien who drew the project for the new mounting of the Great Cameo of Sainte-Chapelle (Paris, Bibliothèque nationale de France) created in the Delafontaine Workshop. Between 1810 and 1818 he directed the firm in association with his father. The contract drawn up between father and son states that the latter was alone responsible for the organization of the shops, for sales and purchases, for the creation of drawings and execution of models, for the order of these models in copper, for their expedition to and return from the foundry, and for their reception straight from the foundry before being reworked at the workshop. He was also in sole charge of all external relations concerning the workshop. By the end of December 1818 he was the only remaining director. He sold the prosperous Maison Delafontaine to his son Auguste-Maximilien in 1840. After the fall of Napoléon, he was involved in the decoration of the Louvre, and during the reigns of Louis XVIII and Charles X produced various bronze and gilded-bronze adornments for the architect Pierre François Léonard Fontaine. His name appears in a variety of archival documents that help us understand the wide range of the workshop's production.[23] He was a founder for sculptors such as James Pradier and François Rude.[24] He created bronze casts after ancient marble models,[25] and as a restorer he completed several sixteenth-century bronze reliefs by Andrea Riccio and gave them a patina.[26]

It is thus possible that the Child with a Bulla was reconstructed in the Delafontaine Workshop during a phase of restoration that did not involve any real casting process. This reconstruction could have been carried out when Jean-Baptiste-Maximilien was still working in his capacity as supervisor of the craftsmen employed in the workshop. Alternatively, it might have been carried out under Pierre-Maximilien's stewardship, if it took place after December 21, 1818, and well before Maurice's death in May 1820. The neck, which was probably extremely deformed, was smoothed with a saw (fig. 7.16). Part of the eighteenth-century plate fastened at the chest opening was also adjusted and smoothed out. The restorer had to fix the heavy right

FIGURE 7.16. Neck smoothed with a saw

FIGURE 7.17. Between 1809 and 1820 (third phase of restoration), the protruding end of the larger rivet (from the second phase of restoration) was sawn off and a smaller one was driven into the right arm.

FIGURE 7.18. The dark chemical patina applied between 1809 and 1820 (Delafontaine). Since the modern right arm was already in place, some areas that were too close to the rivets were not reached.

arm again: two holes of different sizes made in the drapery correspond to two iron rivets driven into the area of the elbow (fig. 7.17). The protruding end of the bigger rivet, dating from the eighteenth-century restoration, was sawn off and the second, smaller one was driven into the arm. As noted above, one of the birds held by the Child with a Bulla in the Van Hoorn sale catalogue had become a "piece of fruit" in Durand's inventory description. In fact, the head of this second bird had been cut off and its body filled with a lead-tin alloy. The same alloy was used for a soft brazing operation visible in the right leg and at the junction of the modern folds and the ancient drapery behind the left leg. Finally, the bronze was entirely covered with a dark chemical patina applied with a brush. The right arm was already in place during this operation, since the patina did not reach some zones that were too close to the rivets (fig. 7.18).

Twentieth-Century Restoration

The fourth alloy identified in our study was found in a cylinder made of two curved sheets joined by hard brazing and driven into the neck (fig. 7.19; see also fig. 7.7): it is a brass alloy (0.03 percent tin, 4 percent lead, 26 percent zinc). We suggest that this cylinder was made to support a black-painted waxy restoration of the bulla ribbon knot placed on the back of the statue, on top of the toga below the nape, at a place where the bronze had been torn off before 1809 (figs. 7.20a–b). Analyses[27] of the sample taken from the black-painted waxy restoration of the bulla confirmed that the ribbon knot was executed when the statue was already in the Louvre.

FIGURE 7.19. The cylinder driven into the neck between 1944 and 1964. The previous fixing holes were filled with a mixture of paraffin and beeswax at the same time.

FIGURES 7.20a–b. The black-painted waxy restoration of the bulla ribbon knot was placed on the back of the statue, below the nape, between 1944 and 1964 (a). Figure 7.20b shows the interior of the restoration with cotton added as a fill.

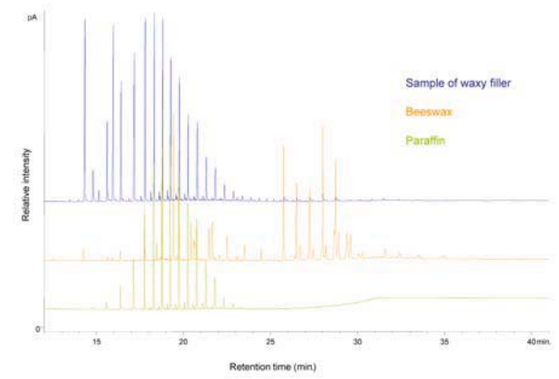

FIGURE 7.21. The waxy restoration of the bulla ribbon knot was identified as a mixture of paraffin and beeswax.

FIGURE 7.22. The earlier fixing holes of the right forearm and the zone of drapery where the metal had been ripped off were filled with the mixture of paraffin and beeswax between 1944 and 1964.

Indeed, the white waxy material was identified as a mixture of paraffin and beeswax (fig. 7.21). Paraffin is a substance that occurs naturally in petroleum. It was discovered by Carl Reichenbach in 1830[28] and made its debut in 1850, after chemists discovered how to separate and refine it. The paint layer imitating the ancient bronze lies directly on the paraffin-beeswax mixture, without any intermediate ground layer. The black-greenish color was obtained from a mixture of carbon black, iron oxide, lead white, and a green pigment that is a copper arsenite–based material. According to the elemental analysis, two pigments, Scheele's green and the Schweinfurt green, can give this result. The former is a copper arsenite[29] discovered in 1775 by the eponymous Swedish chemist and gradually replaced by the Schweinfurt green, a copper aceto-arsenite salt,[30] first produced by Wilhelm Sattler at Schweinfurt, Germany, in 1814. Due to the arsenic content, these pigments are highly toxic, and although this fact was already known at the end of the nineteenth century, both pigments were still listed in manufacturers' catalogues of artist's pigments during the first half of the twentieth century.[31] It seems that by the early 1960s they were no longer marketed.[32] Since the same waxy material filled the older fixing holes in the neck (see fig. 7.19), and was used on the right shoulder (see fig. 7.14) and on part of the drapery (fig. 7.22), it is clear that this phase of restoration was carried out at the same time that the right arm was removed and the head given a new position, that is, between 1944 and 1964.[33]

During the most recent conservation the surface was cleaned using solvents on cotton swabs that turned yellow. The material thus removed outside the waxy restoration area was identified by pyrolysis-gas chromatography-mass spectrometry as a mixture of beeswax and polyvinyl acetate.[34] It is reasonable to assume that this material was applied as a protective layer.[35] As the polyvinyl acetate was already on the market in the second half of the twentieth century, it could have been contemporary with the restoration of the ribbon knot or used during a later intervention.

Reconstruction and Conservation, 2005–2010

In our recent conservation treatment of the Child with a Bulla, it was essential to respect the statue's composite appearance, for, as outlined above, this was the result of successive phases of restoration during its modern history. Within this framework, it was decided to remove the cylinder driven into the head between 1944 and 1964 (see fig. 7.19) in order to establish the correct position of the neck, and to replace the eighteenth-century arm.

Replacing the arm presented no particular difficulty, since it was simply a question of following the positioning originally adopted in the eighteenth century. The repositioning of the head turned out to be much more complex, since as a result of the previous restorations there were practically no ancient attachment zones remaining between the head and the neck. Following painstaking research, a junction zone approximately two millimeters square was identified

FIGURE 7.23. The new internal armature system used to position the head

in the right back part of the neck, giving us at least a point of reference for the repositioning of the head.

This new positioning had to follow various criteria that were not easy to reconcile. First, the head had to be placed in a position that was anatomically correct, but in view of the weak contact zone this necessitated making numerous attempts at different positions and adjusting them before deciding on the correct solution. Second, the operation had to be totally reversible, in order to respect the authenticity of the work by avoiding any new modification. Finally, the aim was to modify the head so that the evidence of restoration would remain apparent without detracting from the viewer's overall impression.

On the basis of these constraints, a model of the internal armature was devised and constructed in the conservation workshops of the Louvre (figs. 7.23, 7.24).[36] This mechanism consisted of a metallic structure that was based in the lower part of the body, and that extended upward to ease the tension generated by the attachment of the arm, ending in the upper part with an adjustable mechanical system for fixing the head. For it was indeed necessary to adjust the upper and side position of the neck, as well as its tilt. A first mechanism on ball-and-socket joints was attached to the main rod to permit the rotation and inclination of the head. The mechanism was extended by a tubular rod to adjust the height.

The placement of this mechanism in the head was carried out using a mechanical cam nut (a piece of equipment used for mountain climbing), consisting of several cams mounted on a central axis equipped with a spring. Once the mechanism had been inserted by force into the head, the spring was released so that the cams could move apart from each other. To distribute the mechanical tensions, epoxy resin pads that fitted the interior volume of the head were fixed to the extremities of the cams.

Once the final position had been adjusted, the mechanism was locked by blocking screws placed at the level of the armature. The use of this technique meant that we were able to fix the head to the armature without having to resort to perforating or sticking. The operation is, moreover, entirely reversible, since the whole mechanism can be released by applying pressure to the spring.

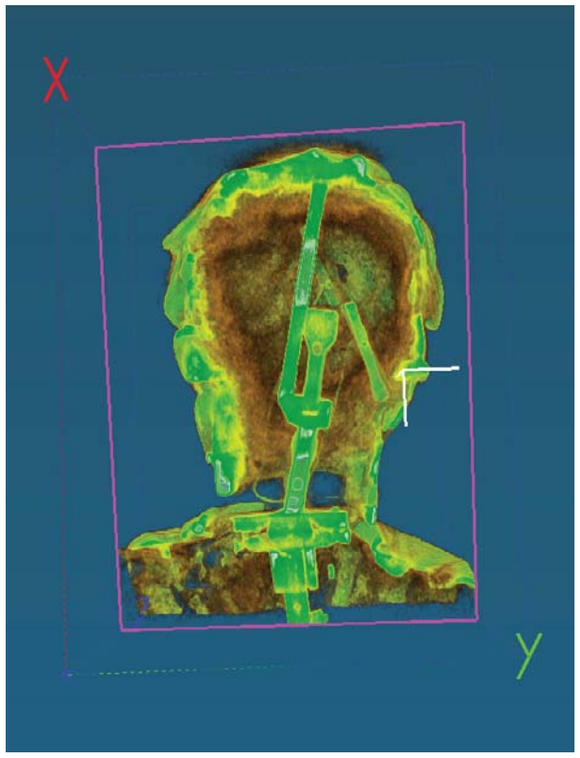

FIGURE 7.24. CT scan, taken from the back, showing the internal mechanical system for fixing the head

We are deeply grateful to Janice Abbott for correcting the English version of this essay and translating certain parts from French into English. Our thanks also go to Anne Dion, curator in the Department of Decorative Arts at the Louvre, for the information she gave us concerning the Delafontaine bronze founders. X-rays and tomographies were made by the late Thierry Borel, to whom this essay is dedicated.

1 J.-B.-P. Le Brun, *Catalogue des objets rares et précieux…provenant du cabinet de feu M. le baron P. N. Van Hoorn van Vlooswyck.…* (Paris, 1809), p. 11, no. 1; Règne de Charles X. Collection Durand (1ère partie), Paris, Archives des musées nationaux, 6 DD 1, no. 2766.

2 R. Bianchi Bandinelli, "Il putto cortonese del museo di Leida," *Critica d'arte* 1 (1935–36), p. 91, no. 8 (right hand); T. Dohrn, "L'Arringatore, capolavoro del Museo Archeologico di Firenze," *Bollettino d'arte* 1 (1964), p. 108 (right and left arms, right leg—partially or totally completed—and the head); H. Gabelmann, "Römische Kinder in Toga praetexta," *Jahrbuch des Deutschen Archäologischen Instituts* 100 (1985), p. 502 (the two legs).

3 Bianchi Bandinelli, "Putto cortonese" (note 2), pl. 63, fig. 10.

4 J. Charbonneaux et al., *Grèce–Rome*, vol. 2 of *Histoire générale des religions*, ed. M. Gorce and R. Mortier (Paris, 1944), p. 341.

5 Dohrn, "Arringatore" (note 2), p. 109, fig. 24 (right arm removed). The photographs published by Dohrn were taken purposely for his essay (Maurice Chuzeville, letter to Tobias Dohrn, January 5, 1968, Paris, Musée du Louvre, museum files). In this photograph the position of the head appears to be a little different, sloping slightly further back.

6 S. Descamps[-Lequime], B. Mille, and D. Robcis, "L'Enfant à la bulle: Histoire moderne d'un bronze antique," *Technè* 27–28 (2008), pp. 11–20.

7 Gabelmann, "Römische Kinder" (note 2), pp. 502–3, 507–8.

8 Gabelmann, "Römische Kinder" (note 2), pp. 507–8, fig. 5.

9 The eyes of the bronze child were cast along with the head and were not inlaid. This technique, unusual for a second-century B.C. bronze statue, seems to have been intended to increase the impression of similarity between the two heads.

10 G. Lahusen and E. Formigli, *Grossbronzen aus Herculaneum and Pompeji: Statuen und Büsten von Herrschern und Bürgern* (Worms, 2007), pp. 16–19, 162, no. 1.

11 Lahusen and Formigli, *Grossbronzen aus Herculaneum and Pompeji* (note 10), pp. 29, 33, no. 2, figs. 33–35.

12 Dohrn, "Arringatore" (note 2), pp. 97–100.

13 One of his first guides in Italy was Raphael Mengs.

14 G. Dennis, *The Cities and Cemeteries of Etruria* (London, 1848), p. 442; J. Murray, *A Handbook for Travellers in Central Italy* (Rome, 1857), p. 237.

15 Bianchi Bandinelli, "Putto cortonese" (note 2), p. 90. The statuette is now in the Archaeological Museum of Leiden.

16 Le Brun, *Catalogue des objets rares et précieux* (note 1), p. 11, no. 1.

17 Paris, Archives des musées nationaux, 1 DD 84, no. 2766.

18 Paris, Bibliothèque nationale de France, V 54596, p. 11. The name is spelled both "Morices" and "Morice" on one page, and "Maurices" elsewhere.

19 See *Catalogue d'objets de curiosité, antiques et modernes, qui composaient le cabinet de feu M. Maurice.…* (Paris, 1820), preface.

20 Jean-Baptiste-Maximilien Delafontaine (1750–1820) was the first craftsman of a dynasty of four generations of founders active between 1772 and 1905. In 1787 he was the managing agent of the Communauté des fondeurs, doreurs, graveurs. He is known to have executed the bronze Corinthian capitals for the Arc de Triomphe du Carrousel, designed by Charles Percier and Pierre François Léonard Fontaine, and built between 1806 and 1809 in the courtyard between the Louvre and the Tuileries; see B. Metman, "Répertoire des fondeurs du XIXe siècle," *Archives de l'art français*, n.s., 30 (1989), p. 186; D. Ledoux-Lebard, "Le destin exceptionnel de deux bronziers," *L'estampille*, March 1989, pp. 66–67.

21 *Catalogue d'objets de curiosité* (note 19), p. 7.

22 Pierre-Maximilien Delafontaine (1774 or 1777–1860) was the son of Jean-Baptiste Maximilien. He studied in Jacques-Louis David's studio and exhibited as a painter at the Paris Salons between 1798 and 1802; see Ledoux-Lebard, "Destin exceptionnel de deux bronziers" (note 20), pp. 66, 68–69; A. Lefébure, "Un bronzier fidèle au néo-classicisme: Pierre-Maximilien Delafontaine," *Dossier de l'art* 5 (December 1991–January 1992), pp. 26–35.

23 See, for example, "Partie non officielle: Exposition générale des produits de l'industrie française en 1834," in *Archives du commerce et de l'industrie agricole et manufacturière*, vol. 7 (Paris, 1834), p. 157: "M. Delafontaine works particularly with bronzes that are for the construction of buildings, such as espagnolettes, balconies, railings, banisters, locks, etc. He has no foundry, but he employs in his workshops a certain number of assemblers and engravers. M. Delafontaine…should have taken pleasure in seeing the public fooled by his perfect pastiches of ancient bronzes, of which he presented a quite remarkable collection"; C. Dupin, *Rapport du Jury central sur les produits de l'industrie française exposés en 1834* (Paris, 1836), p. 140: "Amid the rich collection of bronzes displayed by this maker, we cite in the first rank the casts of ancient figurines and two superb candelabras of great size. These different works are highly remarkable for their fine execution and perfect imitation of a natural patina. The jury awards a silver medal."

24 James Pradier, letter to Pierre-Maximilien Delafontaine, probably December 1819, in *Pradier, Correspondance*, ed. D. Siler, vol. 1, *1790–1833* (Geneva, 1984), p. 31; Lefébure, "Bronzier fidèle" (note 22), pp. 26, 34.

25 Lefébure, "Bronzier fidèle" (note 22), p. 34; Paris, Musée du Louvre, Department of Sculpture, CC 209, 210, after ancient marble sculptures conserved in the Department of Greek, Etruscan, and Roman Antiquities, Ma 414 and Ma 682.

26 Paris, Musée du Louvre, Department of Decorative Arts, 0A 9092–9099; Lefébure, "Bronzier fidèle" (note 22), pp. 29–31. Among the bronze additions were "six human heads, a ram's head, parts of wings, and two trumpets."

27 For this study a few microscopic samples were taken and scientific analyses carried out in order to clarify their formulation. Initially, analyses by Fourier transform infrared spectroscopy were performed in order to assess the main components and help us decide which additional, and more specific and sensitive, techniques should subsequently be adopted. Pigments and fillers were identified by scanning electron microscopy with energy dispersive X-ray analysis carried out directly on the free samples or on cross-section form (by Yannick Vandenberghe at the Centre de recherche et de restauration des musées de France).This enabled us to establish the layered structure of the restored area. The organic phases (oil, resin, waxes, etc.) were characterized by the chromatographic technique after pyrolytic or wet treatments.

28 C. V. Horie, *Materials for Conservation: Organic Consolidants, Adhesives and Coatings*, 2nd ed. (Oxford, 2010), pp. 125–130.

29 $3CuAs_2O_3.xH_2O$. Color index Pigment green 22, CI 77412.

30 $Cu(C2H3O2)2.3CuO(AsO2)2$. Color index Pigment green 21, CI 77410.

31 They are still mentioned in the Lefranc catalogue (Fabrique des couleurs et vernis: couleurs fines et matériels pour la peinture à l'huile) in 1935.

32 I. Fiedler and M. A. Bayard, "Emerald Green and Scheele's Green," in *Artists' Pigments,* vol. 3, ed. E. West FitzHugh (Oxford, 1997), pp. 219–71.

33 See note 5 above.

34 PVAc. The way in which the sample was taken does not make it possible to determine if this material was applied in a single- or a double-layer system.

35 PVAc is a synthetic polymer that, in the form of adhesives, varnish, and medium for retouching, was used a great deal for conservation purposes in the late 1940s; see Horie, *Materials for Conservation* (note 28), pp. 141–142. In France we can estimate that this product was widely used for conservation around 1950.

36 This original system was designed and created by Stéphane Penaud, an art technician working in the assembly workshop of the Louvre.

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8 | Mounting and Patina

Nineteenth-Century Solutions in the Restoration of Large Bronzes in Berlin's Antikensammlung

Uwe Peltz

Restorers' reports of work undertaken in the nineteenth century and earlier are only rarely available. Private collectors occasionally mention restorations in their correspondence, but only when the interventions are extensive and therefore costly, intended to enhance a work's value rather than simply preserve it (all too often the owners were proudest of how much a piece was worth). As for professionals working in early public collections, only now and again do they provide comments regarding the restoration of ancient bronzes, and their descriptions seldom go beyond impressionistic indications of the color of a patina—considered more or less "noble"—and listings of missing sections or sometimes major breaks. Modern bases are discussed only occasionally, which is surprising, for elaborate bases made of precious materials were created to do aesthetic justice to important or newly discovered antiquities.

All this holds true for the restoration histories of the ancient bronzes in Berlin that will be discussed here: the Youth from Salamis,[1] the Praying Boy,[2] the Xanten Boy,[3] and the Hypnos from Jumilla.[4] All four of these male figures illustrate two primary tasks faced by early restorers:[5] the constructing of secure mounts[6] for complete or fragmentary bronze statues and the treating of the metal's corroded surface. In many cases, these restorations also had to engage with earlier interventions that had been undertaken by technicians employed at the objects' findspots or by art dealers and collectors. At first swivel mounts were important in Berlin, just as in other European collections, and significant motives behind their creation were the display of newly found objects, exhibition openings, or gallery redesign. Only rarely are restorers' notes found in the inventory of the Antikensammlung,[7] and as will be seen, there is only limited evidence for drastic patina cleaning in the Berlin workshops.

Antiquities were displayed for the public in the first museum building on Berlin's Museum Island (the present-day Altes Museum) beginning in August 1830. The installation in the bridge-like passageway between the Altes Museum and the Neues Museum, which was opened in stages between 1850 and 1859, was initially reserved for large ancient bronzes.[8] Later the north hall on the main floor of the Altes Museum was redesigned, and bronze statues were among the sculptures installed there. Following the transfer of the post-antique works from the Altes Museum

FIGURE 8.1. Berlin, Altes Museum, second floor, Hall of Figural Bronzes (gallery 3), 1907. View to the southeast showing the Praying Boy and the Xanten Boy

FIGURE 8.2. Berlin, Altes Museum, second floor, Hall of Figural Bronzes (gallery 3), early twentieth century. View to the southwest showing the Hypnos from Jumilla and the Youth from Salamis

to the Kaiser-Friedrich-Museum (the present-day Bode Museum, which opened in 1904), the spaces that were freed up were used for a new arrangement of the antiquities. Beginning in 1907, and continuing until the start of the Second World War, the statues discussed in this essay were united with other bronzes in the Hall of Figural Bronzes (gallery 3). Photographs of the gallery document the statues' disposition in the early twentieth century (figs. 8.1, 8.2).[9] These and earlier photographs are a valuable aid in determining the condition of the bronzes and the methods of their display.[10]

Displaying Ancient Bronzes

The Xanten Boy

Fishermen dragged the Xanten Boy (fig. 8.3–5) out of the Rhine, near Xanten, in 1858.[11] The large bronze is lacking its right forearm, portions of the wreath in its hair, its metal base, and the tray it held in its hands. Nonetheless, this dumbwaiter, dating from the late Hellenistic to the early Imperial period, is the best preserved large bronze in the Berlin collection.[12]

The lithograph published by Karl Friederichs in early 1860 after a now-lost photograph from the previous year shows the Boy on a bronze base for the first time.[13] The simple rectangular stand with a modest molding at the bottom was attached shortly after the statue's arrival in

FIGURE 8.3. The Xanten Boy, 80–50 B.C. Bronze, H. 145 cm (57 in.). Berlin, Neues Museum (inv. Sk. 4). The statue is shown in its present state.

FIGURES 8.4a–b. The Xanten Boy, about 1900

FIGURE 8.5. The Xanten Boy, after 1911–before 1919

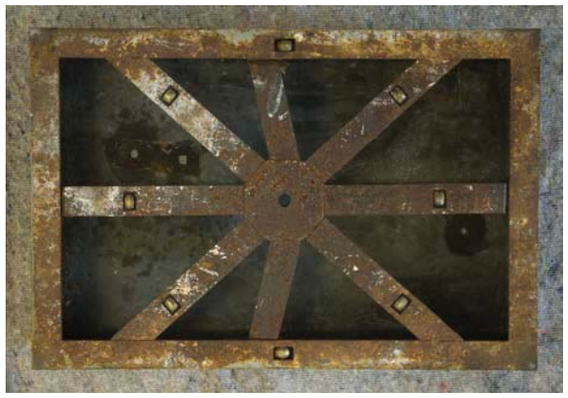

FIGURE 8.6. The Xanten Boy: swiveling mechanism with rollers in the base

FIGURE 8.7. The Xanten Boy: mounting irons connecting the statue to the base

Berlin in 1859,[14] and the new acquisition was immediately displayed in the passageway between the Altes and Neues Museums,[15] where it stood in the distinguished company of the Praying Boy, the Winged Victory of Calvatone, and the gilt Head of a Goddess.[16]

The base, complete with the iron armatures that secured the statue, survives untouched,[17] and is worth describing in detail. It resembles a hollow box, with an iron frame originally painted green. This is attached on the underside to a bracing frame with iron bands radiating from a central sleeve (fig. 8.6). Rollers are set into six of the eight bands and at two points on the frame at equal distance from the sleeve. This mechanism allowed the sculpture to be swiveled atop a display pedestal.[18] The central sleeve must have received a bolt anchored in the pedestal and served as the statue's rotation axis. Wrought-iron pins, easily removed and replaced, secured the statue to the base (fig. 8.7). Even after conservation in 2007, this nearly 150-year-old construction continues to tie the statue to its (now circular) bronze base. The technical design of these pins was the work of an experienced restorer: were the statue's right arm preserved it could almost stand without additional support, and to prevent it from tipping it was necessary only to insert a long iron pin in the left leg. The figure was clamped to the base with a threaded hook in the left foot and a simple bolt in the right one. The turning mechanism on the rectangular base is still fully functional. As will be shown, the Praying Boy was placed on a base of the same construction, so one assumes that the swivel mounting of both statues—and conceivably of the Winged Victory of Calvatone as well—was specially created for their display in the passageway.

In 1871, Friederichs announced that the large bronzes were being moved to the Altes Museum,[19] and this was likely accomplished soon afterward.[20] Along with the other bronze sculptures, the Xanten Boy was given a new position on the main floor, in the Hall of Gods and Heroes. The precise location cannot be established, either for the tray bearer or for any of the other large bronzes in the gallery, which took up the entire north wing.[21] In the last third of the century the exhibition space became congested with finds from Berlin's excavations, to the point that rearrangements were unavoidable.[22] The earliest surviving photographs of the Xanten Boy, from around 1900, show that the figure could still be rotated (see figs. 8.4a–b)—which would have been convenient for the photographer, given the cramped quarters in the gallery.[23] The photographs also document a distinct discoloring on the top of the stone pedestal, as if the light stone beneath the base were heavily soiled. These obvious marks were surely not the result of regular use of the swivel apparatus. Indeed, by this point the swivel mechanism was employed only in making photographs or possibly for study purposes. It is hardly probable that it was used by museum visitors, for when swiveled, the base extended out over the edge of the pedestal. This would have been recognized as a danger to both the public and the ancient bronze itself.[24]

FIGURE 8.8. The Praying Boy, 320–300 B.C. Bronze, H. 128 cm (50 3/8 in.). Berlin, Altes Museum (inv. Sk. 2). The statue is shown in its present state.

FIGURE 8.9. Drawing of the Praying Boy by H. Dähling (probably Heinrich Anton Dähling). From Konrad Levezow, "Die Kunstschätze des Königl. Preussischen Hauses," *Der Freimüthige: Berlinische Zeitung für gebildete, unbefangene Leser*, 1803, frontis.

Little changed in the new installation, from 1907, on the Altes Museum's second floor. The photograph (see fig. 8.1) dating from the year the Hall of Figural Bronzes opened[25] shows the Xanten Boy with its bronze base in the center of the gallery atop a rectangular, presumably dark red, strongly veined marble pedestal.[26] Again it was placed much too high, so that one could not properly appreciate the figure's structure and proportions,[27] though the elevated position of the camera used for exposing glass-plate negatives in the 1910s meant that pictures present the Xanten Boy from roughly the perspective of the ancient viewer (see fig. 8.5).[28]

The Praying Boy

The late classical Praying Boy was discovered at the end of the fifteenth century during renovation of the city wall in Rhodes (fig. 8.8).[29] Its name comes from the way that the arms, restored in the seventeenth century, are raised in what has been seen as an ancient gesture of prayer[30] (the interpretation is not undisputed).[31] From 1806 to 1815 it was in the Musée Napoléon (as the Musée du Louvre was then called), among the numerous works of art plundered by Napoléon and presented as booty to the museum. The first monograph on the work appeared in 1808. In it Konrad Levezow continued the discussion he had initiated in 1803 regarding the arms, one or both of which were suspected even in the nineteenth century of being copies, or at least heavily reworked.[32] This focused attention on the interpretation of the bronze, which Levezow was the first to identify as a praying figure, and left no room for any discussion of its modern base.[33] Levezow's 1803 description of the work is supplemented by the frontispiece in the bound annual of the weekly *Der Freimüthige*, an engraving by a certain Wachsmann after a drawing by the artist H. Dähling (fig. 8.9).[34] Levezow described the image as a "very precise and accurate rendering,"[35] though in truth the Praying Boy appears too plump. What is important about the image is its inclusion of a small, slightly convex square base. The frontispiece of Levezow's 1808 monograph is another Dähling illustration, this one picturing the Boy in three-quarter view, less athletic, and standing on a flat round base (fig. 8.10). Again Levezow attests to the accuracy of the depiction,[36] which suggests that the statue had been given a new base—or that Levezow was simply not scrupulous enough in his vetting of these drawings.

Fifteen years after its Parisian exile, the statue, at that time the most famous of Berlin's antiquities, was placed in the Hall of Gods and Heroes opposite the entrance to the Rotunda in the museum building that opened in 1830 (the present-day Altes Museum). A column of eastern porphyry with a capital of Carrara marble that incorporated a swivel mechanism was specially created for the new installation in this prominent spot.[37] The swivel mounting of the Praying Boy thus dates from the first third of the nineteenth century. It remains unclear, however, whether the statue was affixed to the capital directly or had its own base. The watercolor by Carl Emanuel Conrad[38] suggests the latter, for there one sees between the feet and the capital a flat base

FIGURE 8.10. Drawing of the Praying Boy by H. Dähling (probably Heinrich Anton Dähling). From Konrad Levezow, *De Iuvenis Adorantis Signo ex Aere Antiquo Hactenus in Regio Berolinense nunc autem Lutetiae Parisiorum Conspicuo* (Berlin, 1808), frontis.

like the one pictured in the later Dähling drawing. In the first edition of his catalogue of ancient sculptures in the Altes Museum (1830), Friedrich Tieck writes that "the pedestal is formed by the drum of a column of oriental porphyry." Subsequent editions of this publication, up until the thirtieth in 1855, do not mention the capital,[39] and one wonders whether mentioning the base was simply deemed unimportant, or the capital had already been removed in 1830.

From 1858 the Praying Boy was displayed in the passageway between the Altes and Neues Museums.[40] For that reinstallation the old base was replaced by a bronze one that in its first form matched the base of the Xanten Boy in style and technique. The Praying Boy was now furnished directly with a swiveling mechanism.[41] However, it was only in 1885 that there was mention of the addition of a plinth (which must be the brass base) and, even then, there was no mention of the swivel option.[42] The earliest known picture, the photograph made for sale by the publishing house W. Speemann beginning in 1883, shows the beveled base, with its swivel mechanism hidden inside; the molding is visible on one corner (fig. 8.11).[43]

It is unclear where the large bronzes were placed after their removal from the passageway between the Altes and Neues Museums and before their installation in the Antiquarium (the department of ancient minor arts at the Berlin museum),[44] but in the case of the Praying Boy there is at least a hint. The twelfth edition of the museum guide (1902) notes: "In the west gallery (behind the statue of the Praying Boy) lies the office of the director of the Division of Antique Sculptures and Casts (K)."[45] On the floor plan the room marked "K" is next to the northwest stairwell.[46] The director's office was right behind the west gallery's north wall. Apparently the installation had been accomplished only a short time before, for the guide notes that the west gallery had just been rearranged.[47] It is uncertain whether the swivel mechanism was still utilized in this setting.

FIGURE 8.11. The Praying Boy, before 1883. Board-bound photograph (Berlin and Stuttgart, 1883)

It had certainly been abandoned when the statue was placed in the Antiquarium's gallery 3 atop a light-colored stone column, possibly marble, with dark veining. This is the only conclusion one can draw from the photograph of the room from 1907,[48] which shows the Praying Boy placed next to the east wall (see fig. 8.1). If the statue had been turned, its raised arms would have come dangerously close to the wall, if not actually touched it.

Four, or possibly five, devices used to attach the statue to a base have been identified in the left leg.[49] Given that the modern history of the Praying Boy goes back more than five hundred years, it is difficult to date them, and any reconstruction can only be speculative. If one assumes that the figure was first mounted in the Altes Museum on a flat base, the square pipe secured with lead in the left lower leg may have been the first support, the base having been affixed with plaster or lead, as was the custom at the time. It is equally possible that it was for that mounting, and not the subsequent bronze base, that the pipe (which is clearly rusted) was cut off, so that a

FIGURE 8.12. The Hypnos from Jumilla, 200–150 B.C. Bronze, surviving H. 71.5 cm (28⅛ in.). Berlin, Altes Museum (inv. Sk. 1542). The statue is shown in its present state.

FIGURE 8.13. The Hypnos from Jumilla: photomontage to show some of the missing elements

solid wrought-iron square shaft could be inserted into it and secured with resin, and the statue and base tied together with lead.

The Hypnos from Jumilla

In 1902 a three-quarter life-size striding Hypnos (fig. 8.12) was purchased.[50] It had been discovered during construction in Jumilla, in the Spanish province of Murcia, in 1893.[51] The god of sleep lacks his arms, head, left foot, and metal base.[52] The missing elements can easily be imagined on the basis of better-preserved copies—presumably of a late Hellenistic original. These copies were used in assembling the photomontage in figure 8.13.[53]

After the statue was excavated, it was displayed for a short time in Jumilla, and then in Madrid, in the home of the Spanish prime minister, Antonio Cánovas del Castillo,[54] where it was presented as a dancer.[55] Four early photographs, one of which is shown here (fig. 8.14), illustrate that idiosyncratic pose.[56] The statue was supported by a wrought-iron shaft secured in the right leg with lead. The iron shaft—which survives—fixed the statue to a round base, which to judge from the historical photographs was a light-colored, uniform stone, possibly marble. The only surprising finding were traces of cast lead in the left leg.[57] These must be related to the first installation in Jumilla, and they indicate that there the statue was displayed as a striding figure with both feet on the ground.

The Royal Museums in Berlin acquired the statue from the Spanish prime minister's heirs through an art dealer.[58] It was identified as a striding Hypnos even before the purchase, and to display it as such the shaft in the right leg was reworked. The iron was sawn off below the sole of the foot, and presumably the same piece was soldered back on at a different angle for the new installation. In addition, a rod had to be cemented with plaster in the left lower leg.[59] Thanks to the ingenuity of the museums' restorer at the time, we know precisely when this was done. To prevent the plaster from flowing into the hollow interior, the restorer blocked the void with a Milan newspaper dated May 24–25, 1902.[60] This need not suggest that the work was done in Milan. It is much more likely that an Italian or an Italian-speaker living in Berlin reused the weekend paper as an expedient.[61] Glass-plate negatives added to the photographic inventory of the Antikensammlung in September 1902 show the Hypnos, from four different angles—one of which is illustrated in figure 8.15—standing on the green-banded, dark red marble base that serves as its plinth to this day.[62] It is unclear where the Hypnos was displayed for the first five years after its acquisition. Its base is not equipped with a swivel mechanism, perhaps because it could be moved on its pedestal more easily than the larger bronzes, or—more probably—because by the beginning of the twentieth century there was no longer any interest in that type of display. This conjecture is supported by the display of the Hypnos, beginning in 1907, in the Hall of Figural Bronzes along with the other large bronzes, not all of which could be rotated (see fig. 8.2).[63]

FIGURE 8.14. The Hypnos from Jumilla, after 1893–before 1902

FIGURE 8.15. One of the four different views of the Hypnos from Jumilla, 1902

FIGURE 8.16. The Youth from Salamis, approximately 30 B.C. Bronze, surviving H. 119 cm (46 3/4 in.). Berlin, Altes Museum (inv. Sk. 1). The statue is shown in its present state.

FIGURE 8.17. The Youth from Salamis, before 1883. From Adolf Furtwängler, ed., *Die Sammlung Sabouroff: Kunstdenkmäler aus Griechenland*, vol. 1 (Berlin, 1883), pl. 11

The Youth from Salamis

The head, attributes, and bronze base of the larger Youth from Salamis (fig. 8.16) are missing, so that to this day it is difficult to interpret the figure.[64] Much would suggest that the Youth was a classicizing lamp or tray bearer, a dumbwaiter like the Xanten Boy. The statue came onto the Greek art market in 1878, having been raised from the sea near Salamis a short time before. Furnished with a base in Athens, it was purchased by the antiquities collector Petr Aleksandrovich Saburov.[65]

Adolf Furtwängler published the earliest surviving photographs,[66] which show the statue on the Athenian base. This consisted of a square plinth topped by a round slab of presumably dark stone with only slight veining. The back view (fig. 8.17) shows that a solid post (presumably iron) was inserted into the heel of the free leg with some light-colored substance (surely plaster); it extends from the foot as a cylinder but then flares out into a cone shape.[67] The conical section rests on the base, serving as the brace for the clamping device (perhaps secured with a threaded nut) on the underside of the base.

The earliest photographs taken in the Berlin museums show the figure on a simple round base of dark stone with visible veining (fig. 8.18a), just like the dark red marble base for the Hypnos from Jumilla. In the confusion of the Second World War the base was lost,[68] and in the early photographs the turning mechanism inside it cannot be seen. No description of its construction survives, yet the small crank on the side of the base suggests that it was easy to operate. The Youth was first displayed on this base among the marble sculptures on the main floor of the Altes Museum,[69] then (in 1902 at the latest) was moved to the newly arranged west gallery.[70] As in the case of the Xanten Boy, its placement and pedestal are undocumented. We know from Furtwängler's comment only that the figure tipped forward, so that, at the suggestion of the sculptor Albert Wolff, the mounting was slightly tilted, perhaps on a columnar pedestal.[71] The Athenian base was surely replaced by a swiveling marble base at the same time that the statue underwent a second cleaning by the Royal Museums' restorers Antonio Freres and Temistocle Possenti.[72] Thereafter, a series of photographs were taken, most of which were published by Reinhard Kekulé von Stradonitz.[73] A number show the Athenian iron tie between the heel of the free leg and the base (fig. 8.18b), though the visible portions of the plaster fill had been removed. The conservation report from 1985 tells of a second, quite similar post in the standing leg, extending as far up as the thigh.[74]

Once the Youth from Salamis was transferred to the upper floor of the Altes Museum—in 1907 at the latest—a turning mechanism was no longer employed. The statue was positioned against the west wall in gallery 3 (see fig. 8.2),[75] a placement that precludes its rotation—as was the case with the Praying Boy. The two youths, placed opposite each other, were also united by their identical columnar pedestals of light marble with dark veining.

FIGURES 8.18 a–b. The Youth from Salamis, before 1897

The Praying Boy

Discovered at the end of the fifteenth century, the Praying Boy (see fig. 8.8) had already undergone several surface treatments by the nineteenth century.[76] The original corrosion layer was removed immediately after the statue was excavated. This is indicated by an art agent's comments that, aside from its missing parts, the statue was very well preserved and only the hair, which still had the largest patch of corrosion (fig. 8.19), could be "somewhat better."[77] Other spots are undercut or otherwise difficult to reach with tools, and some of them still contained deposits of sand. Alexander Conze provided a description in 1886: "On closer inspection of the surface . . . it cannot be denied that it [the statue] is still in its original condition, with untouched patina only in certain spots, namely the hair, between the thighs, and here and there on the toes."[78] Erich Pernice analyzed the corrosion and the work of restorers in 1908: "The patina, which in certain spots . . . is still preserved today, is not desirable. One notes how deeply it has eaten into the surface on the figure's chin, so deep that the modern restorer did not dare to remove the corrosion completely."[79] The deep corrosion had also produced a pitted and porous layer on the forehead, the right cheek, and the belly.

FIGURE 8.19. The Praying Boy: original corrosion in the hair above the left temple

FIGURE 8.20. The Praying Boy: repeatedly cleaned back with exposed casting bubbles, green corrosion from being displayed outdoors, and brown patination

It was also Conze who noted of the surface that "to very different degrees it has been polished [and] the modern instrument has obviously left its traces;"[80] these traces reveal, as in the case of the Youth from Salamis, described below, the use of files, scrapers, and chisels. Pernice assumed a more intrusive reworking, and felt that "the surface of the bronze has not only been 'polished' but heavily reworked" and that "a comprehensive and ruthless restoration was required to make the figure as smooth as it is today."[81] Regarding the many exposed casting bubbles that are visible, especially on the back (fig. 8.20), Pernice adds: "Only in this reworking did the casting bubbles, which were invisible in the interior of the metal, make their appearance." He concludes that "at least half a millimeter must have been removed from the ancient surface," so that "[these] parts of the body strike discriminating viewers as weak and scarcely lifelike."[82]

It was not only the first cleaning that led to a substantial loss of ancient material.[83] At least one additional large-scale cleaning can be documented. Frederick the Great had the statue placed on the large terrace in the park at Sanssouci, in Potsdam.[84] After being exposed for nearly forty years, it was moved to the Berlin Stadtschloss in 1786.[85] Its worrisome condition prompted a new surface cleaning to remove nearly all the green corrosion that had resulted from its time outdoors. Today traces of the green sulferous copper compounds[86] that are typically produced by air pollution and rainwater can be seen only along the spine (see fig. 8.20). A further result of this restoration is the brown chemical patination that characterized much of the surface of the Praying Boy (see fig. 8.20) in the nineteenth century and still does to this day.

A variety of factors demonstrated that the statue was ancient, and thus valuable: its patination in accordance with contemporary notions of a bronze; remnants of the original corrosion;[87] and traces of earlier surface coloring.[88] Accordingly, for its Parisian sojourn under Napoléon, and for its display in the first installation of the Altes Museum and then in the passageway between the Altes and Neues Museums, no further treatment of the surface beyond dusting was considered necessary.[89] After the last attachment of the arms around 1890[90] the "bronzing" patina at the seams was deeply reworked with files and restored with an olive-green, transparent patina. On both this and the earlier brown chemical patination there are traces of an opaque graphite-colored coating[91] that covered the statue a short time later[92] and was removed only in 1930.[93]

The Xanten Boy

As mentioned above, the Xanten Boy (see fig. 8.3) was unearthed from the gravel riverbed of the Rhine. In freshwater, as opposed to seawater, corrosion may be only partial or even nonexistent owing to a dearth of oxygen. (Kurt Kluge was the first to describe such a surface on archaeological bronzes as a swamp patina.)[94] Under such conditions, the figure developed a crust of green corrosion and sand, which is visible mainly in protected spots like the hollows between locks of hair (fig. 8.21), but also on the right leg (fig. 8.22) and left shoulder.[95] In the first description of the statue immediately after its discovery, Franz Fiedler noted that in water bronzes do not necessarily acquire "verdigris,"[96] and that, following a careful removal of river sludge, the statue exhibited a gleaming, gold-colored luster.[97] However, Pernice saw in the appearance of the Xanten Boy's surface the result of careless cleaning with acid and hence the destruction of the original corrosion: "A figure that not only supposedly but in fact was so heavily cleaned, namely with acid, that its antique, very beautiful patina, still well preserved only in a very few spots, was essentially lost." He added: "The cruel traces of the acid, individual drops of which flowed downward in long streaks, can be seen all over."[98] This is surprising, for Fiedler had correctly substantiated his own opinion:

> The fact that on our statue the patina or greenish rust (the well-known *aerugo nobilis*), which usually serves as a certain indication of the age and authenticity of ancient bronzes, is missing has caused a number of antiquarians to express reservations. However, this is quite without justification if one takes into account that, when constantly immersed in water and protected from direct exposure to air, bronze does not develop verdigris. On this statue, across which the Rhine possibly flowed for centuries and which was covered by its sludge, no *aerugo* could form, and the constant abrasion from waves and sand made it as shiny as it was when first acquired.[99]

FIGURE 8.21. The Xanten Boy: green corrosion layer in the hollows of the locks of hair

FIGURE 8.22. The Xanten Boy: layer of green corrosion on the back of the right leg

As the archaeologist in charge of the Xanten Boy in Berlin, Karl Friederichs confirmed Fiedler's analysis: "Except for a slight crusting on the back, this bronze does not have the usual coating of patina, doubtless because it lay in water."[100] Convinced of this, he later concluded: "The patina accumulated on the back, which lay in sand; all the rest remained perfectly smooth."[101] Even so, the 1885 catalogue of sculpture in the Royal Museums is less explicit: "The oxidation is very slight. Its finders cleaned the statue." In the catalogue of 1891 the gleam of the metal was at least partially ascribed to the cleaning: "The patina is very slight, doubtless in part owing to its [the statue's] lying in water; yet the discoverers of the figure are said to have cleaned it as well."[102] Apparently the Berlin authorities were becoming dubious about the corrosion conditions in the Rhine riverbed and were seeking an explanation for a surface condition found nowhere else on the corroded bronzes of the Antikensammlung. For Pernice, the dull appearance of the metal surface was a further indication of an acid cleaning, for it precisely resembled the appearance of metals etched in a bath of acid.[103] But this conclusion was again unjustified, for the matte surface, too, can be attributed to the findspot: river sand worked on the metal like an abrasive, smoothing the sharper contours.[104]

The appearance of an almost corrosion-free bronze was altered with the application of a graphite-colored coating like the one found on the Praying Boy. The sculptures' similarity suggests that the restoration—perhaps even cleaning—of both large bronzes was undertaken at the same time; in the case of the Praying Boy this was most likely sometime after the arms were attached in the 1890s.

FIGURE 8.23. The Youth from Salamis: state of corrosion layer with loss of the ancient surface and traces of the tools used to remove the marine crust on the left shoulder

The Youth from Salamis

When raised from the salty Mediterranean, the Youth from Salamis (see fig. 8.16) was covered with a thick crust, overgrown with sea flora and fauna. The first photographs published by Furtwängler document a bronze surface largely freed from crust (fig. 8.23),[105] though Kekulé later confirmed that "even when the figure arrived at the Royal Museums there were 'sea deposits, bits of shell, and the like' still adhering to the surface in spots."[106] The first cleaning in Athens was inadequate, so as Kekulé wrote in 1897, the remaining deposits "were carefully removed by the sculptors in our workshop, Messrs Freres and Possenti." Furtwängler had reported this before, but without naming the restorers involved or specifying what methods they had used on the sea deposits, "which meanwhile, after the statue came into the possession of the Royal Museums, were most carefully removed." He also mentions a considerably affected "metal epidermis."[107] The sculpture inventory from 1885 records: "In many spots lime deposits adhered above the oxidation; these have been cautiously removed, otherwise the figure has been untouched by cleaning attempts."[108] This fails to mention the cleaning in Athens, and in the catalogue of sculptures from 1891, a few years after both interventions, there is only the brief note: "The entire

surface of the . . . figure has suffered from oxidation."[109] The sculptors Freres and Possenti were hired by the Royal Museums in 1880 and 1882, respectively, to work on the extensive sculptural finds from Pergamon.[110] For roughly twenty years their primary task, under Freres's direction, was the restoration of the Pergamon Altar frieze. Kekulé's mention of their names confirms a nineteenth-century restoration of the Youth from Salamis, and perhaps of all the large Berlin bronzes. Although Freres and Possenti were stone specialists, at the Royal Museums they also worked on ancient bronze statuettes and their bases,[111] and presumably they were thought to be qualified to remove the traces of a lime-rich crust from the Youth from Salamis. But in dealing with a large bronze they proved to be less skilled. The Athenian restorers had already faced major problems in removing the marine crust, for with it the majority of the ancient surface was lost, and they exposed what Furtwängler referred to as the "metal epidermis."[112] Freres and Possenti were faced with the same difficulties. That is the only conclusion to be drawn from the mention of the particularly painstaking stripping in spots, which, it appears, a disappointed Kekulé refers to as "the spots that now lie exposed in a copper color."[113] Perhaps it had already been determined in Athens that further cleaning with methods that were then available would have led to even greater losses—which occurred (surely inadvertently) through the work of Freres and Possenti in Berlin.

FIGURE 8.24. The Youth from Salamis: distinctive black ancient surface layer on the right foot

FIGURE 8.25. The Youth from Salamis: smoothed-over broken edge at the neck

In both Athens and Berlin the corrosion crust was mechanically removed with chisels, scrapers, files, and sandpaper.[114] The rough and pitted surface of the valuable large bronze was so unsightly that unevennesses and cavities caused by the loss of ancient repairs were smoothed over with a filler composed of plaster, lead sulfate, and cassiterite.[115] Only here and there have portions of the ancient surface level survived as a layer of black sulfide (fig. 8.24).[116]

Kekulé sums up the appearance of the surface as follows:[117] "The overall color of the figure in its present condition is light, greenish and whitish, occasionally brownish and reddish, and here and there a bright green breaks through. As a painting, a color picture, the back strikes one as more vivid than the front" (see fig. 8.23).[118] Modern investigations have supplemented his description of the various colors with the relevant chemical analyses.[119]

The areas where the missing locks of hair rested on the shoulder corroded in a different way. There one sees a uniformly thin layer of olive green (fig. 8.25).[120] The edge on the front of the throat where the separately cast head was attached seems almost metallic and shiny. Because these surface structures are at variance, Kekulé concluded that the head and the lock of hair were lost only shortly before the statue's recovery.[121]

Heretofore, the sharp edge at the sides and nape of the neck, virtually untouched by corrosion, has been seen as a continuation, with two angles, of the tab-shaped seam at the front of the neck (see fig. 8.25).[122] Recent study has shown that a simple angle was customary in the casting of statues,

not this more complex seam.[123] Considering the deformation on the right side of the neck near the edge, both observations lead one to suspect a further, as yet undetected, modern intervention: the radical smoothing of unevenly broken edges to create an aesthetically pleasing neck profile.[124] This is already documented in the Furtwängler photographs, so it is likely that it was done in Athens.[125]

The Hypnos from Jumilla

Buried in soil, the Hypnos from Jumilla (see fig. 8.12) developed a corrosion crust that Kluge described in 1930 as "a delicate matte green to gray green [and] matte red brown."[126] There is no mention of surface deposits of the earth in which it was buried, and as for the interior one reads: "It is completely . . . blocked with soil."[127] Today the inner surface has been cleaned. Evidently in Spain, and for a long time in Berlin, there was no urgency about removing the dirt.

The deformed arm projections, a slight deformation on the left side of the belly, a more obvious one on the outside of the left calf, and a few scrapes on the thighs, precede the statue's excavation. Much deeper are the marks left on the surface by an iron rod with a rounded point. The implement struck the left side of the torso, the belly, and the back repeatedly and deeply, damaging large sections of the corrosion layer (fig. 8.26). Old photographs suggest that the Hypnos retained these obvious gouges, having merely been freed of layers of dirt.[128] It was only in the spring of 1930 that the Antiquarium's metal restorer was contracted to clean and preserve the outer surface. Although this was a twentieth-century restoration, the treatment of the patina reflects methods and standards established in the nineteenth century, as indicated in the description by the Berlin archaeologist responsible, Karl Anton Neugebauer:

> The job of cleaning the Hypnos was performed in the spring of 1930 by the assistant restorer H[ans] Tietz. It was accomplished according to the tried and true method of brushing it with wire brushes, chipping off hard spots with puncheons. Irregular bumps that resisted a first attempt were left. . . . During the course of the work it was discovered that in certain spots the bronze had begun to "bloom" beneath the crust. . . . Arresting this destructive process is a routine task for every custodian of a collection of antique bronzes. . . . The universally accepted way to slow the progress of the destruction is to cover these spots with a protective coating. . . . One employs . . . paraffin, a mineral product, that has been heated to 100 to 115 degrees and in which small bronzes are cooked. . . . The Hypnos was too large for a paraffin bath. For that reason the paraffin was heated to roughly 50 degrees and repeatedly applied with a brush.[129]

The discussion this spurred was not limited to the Hypnos, and exposed fundamentally opposed positions regarding the value of archaeological corrosion and ethical standards in museum

FIGURE 8.26. The Hypnos from Jumilla: marks from the excavation on the left side

restorations.[130] Precisely for that reason, it is highly surprising that in the correspondence of all those involved one finds no mention of the deep and highly visible marks left by the iron excavating tool (see fig. 8.26). On the contrary, the announcement of the acquisition notes: "The condition of the surface, aside from a depressed area beneath the left breast, is excellent."[131]

Conclusion

The condition of large antique bronzes was of greatest importance in determining how they were to be mounted for display. Elegant materials like colored marbles and bronze were selected for their bases, which were attached with wrought-iron constructions that were either permanent or removable. At the time the Altes Museum opened, it seemed important that the sculptures could be rotated.[132] The swivel mechanism for the Praying Boy was perhaps temporarily installed in the pedestal, but in the late 1850s it was directly integrated into an iron bracing like that found beneath the Xanten Boy. Marble bases with ring-shaped swivel mechanisms were created for the new acquisitions of the 1880s, such as the Youth from Salamis. Thus when these statues were placed near windows, all sides of the large bronzes could be turned to the daylight, though the study of changing effects of light and shadow was reserved for employees, the only people allowed to employ the swivel mechanisms. But when the marble base was created for the Hypnos from Jumilla in 1902, there was no longer any thought of allowing the statue to turn, and by the time all the large bronzes were moved to the second floor of the Altes Museum, beginning in 1907, the swivel option had become obsolete.

The Praying Boy had lost its archaeological patina almost entirely by the nineteenth century. Numerous colorings dominate its surface following extensive and repeated cleanings, and these reflect the changing aesthetics of the centuries after its discovery around 1495. Since the three other statues were found in the late nineteenth century, the story of their surfaces is less complicated, but nevertheless offers a view of the fledgling state of conservation science. The Youth from Salamis, disfigured by its marine crust, was made recognizable as an ancient bronze only by an extensive cleaning in the 1880s. Meanwhile, the Xanten Boy—with its swamp patina—was regarded by some as an overcleaned bronze, its almost bare metal surface contrary to the prevalent taste in patinas. Quite different was the Hypnos from Jumilla, which, with its crusty, mostly green patina, corresponded well to the idea of an ancient bronze (indeed, the residues of the earth in which it had been buried further underlined its age and authenticity). In this case, aesthetic preferences dictated that the original corrosion be kept intact—in a similar condition to that required by conservation science today. Practice changed only in the twentieth century, when the Hypnos prompted a debate about patinas in the Berlin collection. On the one hand, it was hoped that the dreaded chloride corrosion could be cured as so-called bronze disease, using

more or less radical cleanings and preventive measures. On the other hand, the loss of the valuable archaeological patina was cause for lamentation.

The scientific study of the corrosion deposits and their chemical behavior as well as the consequences of these studies for restoration practices thus started to be discussed in Berlin in the late nineteenth century and continued into the first half of the twentieth. These discussions intensified the debate about the value and significance of archaeological corrosion deposits on ancient bronzes—commonly referred to as the patina.

Essay translated from the German by Russell M. Stockman

1 See, most recently, W.-D. Heilmeyer, *Der Jüngling von Salamis* (Mainz, 1996) (with bibliography).

2 See, most recently, G. Zimmer and N. Hackländer, eds., *Der Betende Knabe: Original und Experiment* (Berlin, 1997); U. Rohnstock [Peltz], "Die Odyssee des Betenden Knaben," *Restauro: Zeitschrift für Kunsttechniken, Restaurierung und Museumsfragen* 3 (May–June 1998), pp. 172–79; and S. Gerlach, *Der Betende Knabe: Ein Werk aus dem Alten Museum, Antikenabteilung, Staatliche Museen zu Berlin, Preussischer Kulturbesitz, Berlin–Mitte Museuminsel* (Berlin, 2002) (each with bibliography).

3 See, most recently, U. Peltz and H.-J. Schalles, *Der Xantener Knabe: Technologie, Ikonographie, Funktion und Datierung*, Xantener Berichte 22 (Mainz, 2011) (with bibliography).

4 See, most recently, U. Rohnstock [Peltz], "Der Hypnos von Jumilla," in "Antike Bronzen: Werkstattkreise; Figuren und Geräte. Akten des 14. Internationalen Kongresses für Antike Bronzen in Köln, 21.–24.9.1999," ed. R. Thomas, special issue, *Kölner Jahrbuch* 33 (2000), pp. 553–64 (with bibliography).

5 Early restorations of missing elements are not the subject of this essay; they are discussed in my forthcoming doctoral dissertation, "Drei Jahrhunderte Bronzerestaurierung: Historische Methoden zur Erhaltung von Bronzen der Berliner Antikensammlung," at the Staatliche Akademie der Bildenden Künste, Stuttgart. An analysis of the Kore from Kyzikos (inv. Sk. 3) could not be included in this essay, but will be discussed in my dissertation. It, too, was acquired in the late nineteenth century and underwent different phases of mounting. Up until the 1990s it was displayed on a rotatable base. See G. Zimmer, "Das Mädchen von Kyzikos," in K. Gschwantler and A. Bernhard-Walcher, *Griechische und römische Statuetten und Grossbronzen: Akten der 9. Internationalen Tagung über Antike Bronzen, Wien 21–25 April 1986* (Vienna, 1988), pp. 66–73 (with bibliography).

6 In antiquity the Youth from Salamis (U. Peltz, "Technischer Vergleich," in Peltz and Schalles, *Xantener Knabe* [note 3], p. 136), the Xanten Boy (U. Peltz, "Herstellung," in Peltz and Schalles, *Xantener Knabe* [note 3], pp. 59–61; Peltz, "Technischer Vergleich," pp. 135–37), and the Hypnos from Jumilla (Rohnstock [Peltz], "Hypnos von Jumilla" [note 4], p. 564) were affixed to metal bases with soft solder, and the Praying Boy (U. Rohnstock [Peltz] and E. Formigli, "Beobachtungen zur Gusstechnik am Betenden Knaben," in Zimmer and Hackländer, *Betende Knabe* [note 2], p. 140) was attached to a stone base with a lead grouting.

7 The acquisition files (Berlin, Archiv Antikensammlung), unstudied heretofore, are as follows: Youth from Salamis: 529/84; Praying Boy: original inventory, no file; Xanten Boy: 2844/58; Hypnos from Jumilla: 134/02.

8 For the history of the display of large bronzes beginning in the second half of the nineteenth century, see M. Maischberger, "Die Bronzestatue aus dem Rhein an der Spree," in Peltz and Schalles, *Xantener Knabe* (note 3), pp. 7–30 (with bibliography).

9 Four gallery photographs (Berlin, Fotoarchiv Antikensammlung) picture the large bronzes discussed here; they are ANT 3762 (inv. Sk. 2, Sk. 4), ANT 3763 (inv. Sk. 1, Sk. 1542), ANT 6511 (inv. Sk. 1 [right], Sk. 4, Sk. 1542), and ANT 6512 (inv. Sk. 4). Martin Maischberger has shown that the photograph ANT 3762 was taken the year the gallery opened; see Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), p. 16, n. 64. The photographs ANT 6511 and ANT 6512 were inventoried in November 1936. The inventory of negatives preceding ANT 6497 is considered to have been lost since the Second World War, so the inventory of ANT 3763 cannot be verified. One can assume, however, that all the prominent large bronzes were displayed from the start. Publications containing the gallery photographs cited are not named here.

10 Only the surviving historical photographs relevant to the discussion are listed here.

11 H.-J. Schalles, "Auffindung und Erwerb durch die Preussische Krone," in Peltz and Schalles, *Xantener Knabe* (note 3), pp. 1–6.

12 For its function, see H.-J. Schalles, "Ikonographie und funktionale Aspekte," in Peltz and Schalles, *Xantener Knabe* (note 3), pp. 105–6. For the dating, see Peltz, "Herstellung" (note 6), pp. 137–39; H.-J. Schalles, "Datierung und Ausblick," in Peltz and Schalles, *Xantener Knabe* (note 3), pp. 173–78.

13 K. Friederichs, "Die Xantener Erzfigur im Königlichen Museum zu Berlin," *Archäologische Zeitung* 18, nos. 133–34 (January–February 1860), pl. 133. See Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), pp. 9–10, fig. 4; U. Peltz, "Neue und alte Restaurierungen," in Peltz and Schalles, *Xantener Knabe* (note 3), p. 31.

14 The restoration of a base is first mentioned in 1885; see *Verzeichnis der antiken Skulpturen mit Ausschluss der pergamenischen Fundstücke: Königliche Museen zu Berlin* (Berlin, 1885), p. 3, no. 4; unchanged in *Beschreibung der antiken Skulpturen mit Ausschluss der pergamenischen Fundstücke: Königliche Museen zu Berlin* (Berlin, 1891), p. 5, no. 4.

15 See Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), p. 12, n. 52, quoting an 1860 travel guide.

16 M. Schasler (*Die Königlichen Museen von Berlin: Ein praktisches Handbuch zum Besuch der Gallerien, Sammlungen und Kunstschätzen derselben*, 5th ed. [Berlin, 1861], p. 18; 6th ed. [Berlin, 1867], p. 19; 7th ed. [Berlin, 1868], p. 34) mentions that the Winged Victory of Calvatone (inv. Sk. 5), the Praying Boy, and the Head of a Goddess (inv. Sk. 6) were displayed in the passageway to the Neues Museum; he does not mention the Xanten Boy. Perhaps this was merely an oversight, but Schasler could also have counted the large bronze among the new acquisitions that would have interrupted his numbering, and therefore were not always listed; see Schasler, *Königlichen Museen von Berlin*, 5th ed., p. 16; 6th ed., p. 16; 7th ed., p. 17.

17 Peltz, "Neue und alte Restaurierungen" (note 13), pp. 31–32, figs. 18, 19.

18 Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), p. 13; Peltz, "Neue und alte Restaurierungen" (note 13), p. 31; Christian M. Geyer has surveyed the concept and motifs of the swiveling display of sculptures in European collections; see C. M. Geyer, "Bewegliche Sockel für antike Statuen und deren Abgüsse: Ausdruck neuer Erkenntnisinteressen und ästhetischer Bedürfnisse," in *Gipsabgüsse und antike Skulpturen: Präsentation und Kontext*, ed. Charlotte Schreiter (Berlin, 2012), pp. 95–114. I am grateful to Mr. Geyer for his helpful suggestions and for letting me read his essay in manuscript.

19 C. Friederichs, *Geräthe und Bronzen im Alten Museum: Kleinere Kunst und Industrie im Alterthum*, vol. 2 of *Berlins antike Bildwerke* (Düsseldorf, 1871), p. 377, n. 1.

20 The precise date cannot be verified. In 1874 W. Wassermann notes the presentation of the large bronzes in the so-called Hall of Gods and Heroes; see W. Wassermann, *Vollständiger Führer durch die Königlichen Museen Berlins mit besonderer Berücksichtigung der Gemälde-Galerie: Nebst einem Anhang der Sehenswürdigkeiten und Denkmäler Berlin's sowie dem Cataloge der National-Galerie*, 9th ed. (Berlin, 1874), p. 16.

21 See, for example, Wassermann, *Vollständiger Führer durch die Königlichen Museen Berlins* (note 20); P. Löwe, *Neuester Führer durch die Königlichen Museen Berlin's nebst einem vollständigen Verzeichnis der Sauermondt'schen Galerie*, 28th ed. (Berlin, 1878); *Führer durch die Königlichen Museen*, 2nd ed. (Berlin, 1881), 3rd ed. (Berlin, 1882), p. 15; *Verzeichnis der antiken Skulpturen* (note 14).

22 For a detailed discussion, see Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), pp. 12–13.

23 Prints from the glass-plate negatives (Berlin, Fotoarchiv Antikensammlung, ANT 2665 [inv. Sk. 1112a], ANT 7104) were normally cropped. It was only Maischberger's examination of the negatives that revealed nearby displays to the left and right of the photographer's background and the fact that the statue had been turned; see Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), pp. 13–16, figs. 5a–b.

24 The use of swivel mechanisms by visitors to the Altes Museum is still documented in the first half of the nineteenth century; see Geyer, "Bewegliche Sockel für antike Statuen" (note 18), pp. 103–8.

25 Berlin, Fotoarchiv Antikensammlung, ANT 3762; for the dating, see note 9 above.

26 Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), p. 18, n. 66.

27 Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), p. 16; Schalles, "Ikonographie und funktionale Aspekte" (note 12), pp. 107–9.

28 Berlin, Fotoarchiv Antikensammlung, Bard 91. A series of glass-plate negatives was deposited in the Fotoarchiv under the designation "Bard." These photographs were probably commissioned by the publishing house Julius Bard. Its first edition of brief sculpture descriptions from 1911 uses none of these photographs, so serves as a terminus post quem; they were first published beginning in 1922, and were subsequently sold as postcards as well. A terminus ante quem is provided by the publication of one reproduction from the series in 1919; see Maischberger, "Bronzestatue aus dem Rhein an der Spree" (note 8), pp. 20–21. I am grateful to Martin Maischberger, of the Altes Museum, Berlin, for further information about the dating and location of historical photographs.

29 The Praying Boy can boast of having been displayed in nineteen prominent places throughout Europe; see N. Hackländer, "Der Betende Knabe: Eine Antike auf Wanderschaft," in Zimmer and Hackländer, *Betende Knabe* (note 2), pp. 25–34.

30 The arms were cast and attached by a French caster at the behest of Nicolas Foucquet, Louis XIV's finance minister. For all the other early restorations, see U. Rohnstock [Peltz], "Die neue Aufstellung und die Altrestaurierungen," in Zimmer and Hackländer, *Betende Knabe* (note 2), pp. 105–23; Rohnstock [Peltz], "Odyssee des Betenden Knaben" (note 2), pp. 172–79; Gerlach, *Betende Knabe* (note 2), pp. 27–30; and U. Peltz, "Oberflächenvielfalt: Standards früher Restaurierungen antiker Bronzen der Berliner Antikensammlung," in *Standards in der Restaurierungswissenschaft und Denkmalpflege: Beiträge des internationalen Kolloquiums in Berlin, 23.–25.04.2009*, ed. U. Peltz and O. Zorn (Mainz, 2009), pp. 73–74.

31 See, most recently, Gerlach, *Betende Knabe* (note 2), pp. 12–15.

32 Levezow first suspected that both arms were a later addition; see K. Levezow, "Die Kunstschätze des Königl. Preussischen Hauses," *Der Freimüthige: Berlinische Zeitung für gebildete, unbefangene Leser* 17 (1803), p. 67. He later limited his suspicions to the right arm; see K. Levezow, *De Iuvenis Adorantis Signo ex Aere Antiquo Hactenus in Regio Berolinense nunc autem Lutetiae Parisiorum Conspicuo Berlin* (Berlin, 1808), p. 6; and Hackländer, "Betende Knabe" (note 29), p. 30. The arms had already been discussed in Vienna in 1747, in the purchase negotiations conducted by the Prussian ambassador Heinrich Graf von Podewils (on behalf of Frederick the Great) with the statue's owner, Prince Wenzel I of Liechtenstein; see A. Conze, "Der betende Knabe in den Königlichen Museen zu Berlin," *Jahrbuch des Deutschen Archäologischen Instituts* 1 (1886), pp. 4–8.

33 There are no surviving sources regarding the statue's display after the fifteenth century. Even in the manner of Podewils's description of the statue's condition, which considers repairs to the legs and feet in addition to the obviously reworked arms, there is no mention of its attachment to a base; see Conze, "Betende Knabe" (note 32), pp. 4–8.

34 Most probably this was the Berlin painter and draftsman Heinrich Anton Dähling (see *Saur Allgemeines Künstlerlexikon: Die bildenden Künstler aller Zeiten und Völker*, vol. 23 [Munich, 1999], p. 366), who presumably had access to the Praying Boy in the Stadtschloss thanks to his close contacts with the royal house. Dähling executed designs for engravings in the form of ink drawings.

35 Levezow, "Kunstschätze des Königl. Preussischen Hauses" (note 32), p. 67, frontis.

36 Levezow criticized a print offered by Ennio Quirino Visconti, arguing that the Boy seemed too manly, and that the face and proportions were inaccurate: see K. Levezow, *Über die Königlich-Preussischen Sammlungen der Denkmäler alter Kunst* (Leipzig, 1822), p. 21.

37 Hackländer, "Betende Knabe" (note 29), p. 30. Christian M. Geyer pointed out to me that in the summer of 1830 Wilhelm von Humboldt lamented the absence of a swivel mounting of the Praying Boy, and that the installation of the swivel mechanism immediately followed; see Geyer, "Bewegliche Sockel für antike Statuen" (note 18), pp. 103–4.

38 Illustrated most recently, in connection with the Praying Boy, in Gerlach, *Betende Knabe* (note 2), pl. 1.

39 F. Tieck, *Verzeichnis der antiken Bildhauerwerke des Königlichen Museums zu Berlin: Erste Abtheilung*, 1st ed. (Berlin, 1830), p. 8, no. 19; 30th ed. (Berlin, 1855), pp. 19–20, no. 140. Also in E. Gerhard, *Berlin's antike Bildwerke: Erster Theil* (Berlin, 1936), pp. 39–41, no. 19.

40 The design for the passageway by Friedrich August Stüler in the planning phase shows the desired arrangement with the Praying Boy; see Hackländer, "Betende Knabe" (note 29), p. 30, pl. 11.2. See note 16 above.

41 The base was most probably altered at the end of the 1930s. The swivel mechanism was removed along with the cavetto molding, and the standing pose was changed with the insertion of a base atop the pedestal. The original course of the iron molding is documented by tool marks and iron rust; see Rohnstock [Peltz], "Odyssee des Betenden Knaben" (note 2), pp. 177–78.

42 *Verzeichnis der antiken Skulpturen* (note 14), p. 2, no. 2. Conze mentions something similar in a longer essay; see Conze, "Betende Knabe" (note 32), p. 9, n. 20. The drawing from 1891 shows a square base with the proportions of the present one; see *Beschreibung der antiken Skulpturen* (note 14), pp. 2–3, no. 2, ill.

43 Berlin, Archiv Antikensammlung, Nachlass Zahn, Z 64. A print from the same angle but with different lighting later appeared in R. Kekulé, *Die griechische Skulptur*, Handbücher der Königlichen Museen 11 (Berlin, 1906), pp. 265–68, ill. That print shows more of the base molding. Neither of the negatives is in the Antikensammlung.

44 See note 16 above.

45 *Führer durch die Königlichen Museen am Lustgarten mit Ausnahme der National-Galerie,* 12th ed. (Berlin, 1902), p. 14.

46 *Führer durch die Königlichen Museen* (note 45), p. 12 (floor plan).

47 *Führer durch die Königlichen Museen* (note 45), p. 22.

48 Berlin, Fotoarchiv Antikensammlung, ANT 3762; for the dating, see note 9 above.

49 The separate working steps were reconstructed during removal of the restoration in the mid-1990s; see Rohnstock [Peltz], "Neue Aufstellung" (note 30), pp. 120–22, pls. 51.5, 51.6, fig. 13; Rohnstock [Peltz], "Odyssee des Betenden Knaben" (note 2), pp. 172–79.

50 F. von Duhn, "Archäologische Gesellschaft zu Berlin," in *Archäologischer Anzeiger* (Berlin, November–December 1902, p. 162); C. Watzinger, "Erwerbungen der Antikensammlungen in Deutschland," in *Archäologischer Anzeiger*, (Berlin, 1903, pp. 32–33, fig. 11).

51 J. M. Noguera Celdrán and E. Hernández Carrión, *El Hypnos de Jumilla y el reflejo de la mitología en la plástica romana de la región de Murcia*, exh. cat. (Murcia: Caja de Ahorros de Murcia, 1993), p. 13.

52 Evidence that it was destroyed in antiquity comes from the corrosion on the broken edges, which would have been produced gradually while the statue was buried; see Rohnstock [Peltz], "Hypnos von Jumilla" (note 4), p. 553.

53 Deserio Vaquerizo Gil has listed the spots where bronze Hypnoi have been found on the Iberian Peninsula and north of the Alps; see D. Vaquerizo Gil, "El Hypnos de Almedinilla (Córdoba)," *Madrider Mitteilungen* 35 (1994), p. 373, fig. 3. Typical of the striding Hypnos is the outstretched right hand pouring a sleeping potion from a drinking horn, and the lowered left holding a poppy. On the head small wings extend from the temples.

54 Noguera Celdrán and Hernández Carrión, *Hypnos de Jumilla* (note 51), p. 13.

55 On the Antikensammlung's inventory card there is the note: "The figure was previously posed on the right leg and interpreted as a dancer; the figure was first recognized as Hypnos by employees of the Dresden Museum while making a casting of it…D. Juan de la Rada y Delgado, Historia y Arte, Madrid, 1895, I p. 186, only plate. (as dancer)."

56 Four views with this variant mounting were inventoried in 1920 as old holdings; see Inventory no. 128, inv. Sk. 1941, 1–4. I am grateful to Volker

Kästner, of the Berlin Antikensammlung, for making the photographs available to me.

57 Rohnstock [Peltz], "Hypnos von Jumilla" (note 4), p. 555.

58 See note 55 above.

59 The iron bar secured with plaster was replaced in 1983 with a brass pin cemented with synthetic material; see Berlin, Archiv der Restaurierungsdokumentationen Antikensammlung, Restaurierungsbericht no. 70/83.

60 I thank Andrea Babbi, of Heidelberg University, for identifying the poorly preserved weekend edition of Milan's *Corriere della sera*.

61 I had previously assumed that the statue had been reworked and placed on a new base before its arrival in Berlin; see Rohnstock [Peltz], "Hypnos von Jumilla" (note 4), p. 555.

62 Inventory no. 127, inv. Sk. 1109a–d. The acquisition note from November–December 1902 makes do without any illustration, but the submission of photographs is mentioned, which could well have been the new photographs of the now striding Hypnos; see Duhn, "Archäologische Gesellschaft zu Berlin" (note 50), pp. 162–68. Only in the following year did Carl Watzinger publish the negative plate inv. Sk. 1109a in a further statement regarding the acquisition; see Watzinger, "Erwerbungen der Antikensammlungen" (note 50), fig. 11.

63 Berlin, Fotoarchiv Antikensammlung, ANT 3763; for the dating, see note 9 above.

64 Heilmeyer, *Jüngling von Salamis* (note 1), pp. 5–6.

65 Saburov collected ancient works of art during his years as the Russian ambassador in Athens. Transferred to Berlin in 1879, he dispersed his collection before he left the city in 1884; see W. von Bode, *Mein Leben*, ed. T. W. Gaehtgens and B. Paul (Berlin, 1997), vol. 2, pp. 183–84.

66 A. Furtwängler, ed., *Die Sammlung Sabouroff: Kunstdenkmäler aus Griechenland*, vol. 1 (Berlin, 1883), pls. 8–11. The negatives are not in the Antikensammlung holdings. The published reproductions bear the mark of the publisher A. Asher and Co., which presumably had them taken specifically for this publication.

67 The rod was retouched in a photograph of the sculpture taken from the side, and indications of a retoucher's brush can also be seen in other details.

68 Heilmeyer, *Jüngling von Salamis* (note 1), p. 4.

69 *Verzeichnis der antiken Skulpturen* (note 14), p. 1, no. 1.

70 *Führer durch die Königlichen Museen* (note 45), p. 22.

71 *Beschreibung der antiken Skulpturen* (note 14), p. 1, no. 1.

72 For the cleaning, see R. Kekulé, *Archäologische Bemerkungen zur Saburoffschen Bronze* (Berlin, 1897), p. 68.

73 Five photographs of the complete sculpture, and one of the shoulder and neck area, were published; see Kekulé *Archäologische Bemerkungen* (note 72), p. 69, pls. 1–5.

74 H. Born, "Restaurierungen im 19. und 20. Jahrhundert," in Heilmeyer, *Jüngling von Salamis* (note 1), p. 7. The conical thickenings of the iron rods that received the threaded bolts (which could be unscrewed at any time) were not mentioned. One of the solid iron rods had been cut in two during the 1885 restoration.

75 Berlin, Fotoarchiv Antikensammlung, ANT 3763; for the dating, see note 9 above.

76 There are no documents relating to early reworkings or the coloring of the antique original, and they are mentioned only indirectly in discussions of the integrity of the arms. For analysis of the various overlays on the Praying Boy and their color and location, see B. Niemeyer, "Die antike Oberfläche: Hinweise zu Gusstechnik und ehemaligen Aufstellungen," in Zimmer and Hackländer, *Betende Knabe* (note 2), pp. 129, 133–35, pls. 56.1–56.5, 57.1, 57.2. For their chronological context, see Rohnstock [Peltz], "Odyssee des Betenden Knaben" (note 2), pp. 172–79. For interpretation of the coloring, see Peltz, "Oberflächenvielfalt" (note 30), pp. 73–74. For coloring techniques and iconology, see U. Heithorn, "Firnis und Patina: Studien zur Oberflächenbehandlung mitteleuropäischer Bronzeplastiken um 1600," in *Metallrestaurierung: International Tagung zur Metallrestaurierung, veranstaltet vom Bayerischen Landesamt für Denkmalpflege und vom Deutschen Nationalkomitee von ICOMOS, München 23.–25. Oktober 1997*, ed. M. Mach, Arbeitsheft des Bayerischen Landesamtes für Denkmalpflege 94 (Munich, 1998), pp. 81–83. For the coloring of ancient bronzes during restoration, see Peltz, "Oberflächenvielfalt" (note 30), pp. 72–73.

77 R. Kabus-Preisshofen, "Der 'Betende Knabe' in Berlin: Schicksal einer antiken Grossbronze und das Problem ihrer Datierung," in *Archäologischer Anzeiger* (Berlin, 2000, p. 687).

78 Conze, "Betende Knabe" (note 32), p. 9; also E. Pernice, "Untersuchungen zur antiken Toreutik," *Jahresheft des Österreichischen Archäologischen Instituts in Wien* 11 (1908), p. 223.

79 Pernice,"Untersuchungen zur antiken Toreutik" (note 78), p. 224.

80 Conze, "Betende Knabe" (note 32), p. 9.

81 Pernice,"Untersuchungen zur antiken Toreutik" (note 78), p. 224.

82 Pernice,"Untersuchungen zur antiken Toreutik" (note 78), pp. 224–25.

83 For the extent and depth of surface cleanings, reworkings for patination, and smoothing of broken edges, see Niemeyer, "Die antike Oberfläche" (note 76), pp. 129, 133–34; Rohnstock [Peltz], "Odyssee des Betenden Knabe" (note 2), pp. 172–79.

84 M. Oesterreichs, *Beschreibung und Erklärungen der Grupen, Statüen, ganzen und halben Brust-Stücke, Basreliefs, Urnen und Vasen von Marmor, Bronze und Bley, sowohl von antiker als moderner Arbeit, welche die Sammlung Sr. Majestät, des Königs von Preussen, ausmacht* (Berlin, 1775), p. 21, no. 113.

85 Hackländer, "Betende Knabe" (note 29), p. 29.

86 Basic copper sulfate brochantite.

87 The patination did not affect the archaeological corrosion layer in terms of color, since the colorant reacted solely with the underlying metal; see Niemeyer, "Die antike Oberfläche" (note 76), p. 133.

88 See note 76 above.

89 Levezow, Tieck, and Gerhard say nothing about the statue's surface condition. See Levezow, "Die Kunstschätze des Königl. Preussischen Hauses" (note 32), pp. 67–68; Levezow, *De Iuvenis Adorantis Signo* (note 32); Tieck, *Verzeichnis der antiken Bildhauerwerke*, 1st ed. (note 39), p. 8, no. 19; and Gerhard, *Berlin's antike Bildwerke* (note 39), p. 39, no. 19.

90 Just before the arms were added, a plaster cast of the Praying Boy was made. It precisely reproduces the contour of the edges where the arms were attached in antiquity. Photographs were inventoried on May 3, 1897; see Inventory no. 127, inv. Sk. 804 a, b. Such a casting could have been made only before the restorations.

91 The paraffin noted in 1994 was conceivably applied as a preservative in the late nineteenth century; see Niemeyer, "Die antike Oberfläche" (note 76), p. 134.

92 The earliest known photograph of the statue in this condition was published in Kekulé, *Griechischen Skulptur* (note 43), pp. 265–68, ill. The print bears the mark MR&C. Another photograph appeared two years later; see Pernice,"Untersuchungen zur antiken Toreutik" (note 78), pp. 223–25, fig. 97. Neither of the negatives was deposited in the Antikensammlung archive. The oldest negative plate in the Fotoarchiv of the Antikensammlung, Bard 90 (1911–19), also shows the Boy with a dark, monochrome surface; for the dating, see note 28 above.

93 Karl Anton Neugebauer, the archaeologist responsible for the bronzes, responded to a photograph question from C. Schuchardt on March 20, 1930, with the information that "the head is painted with a black wax pigment"; see Berlin, Archiv Antikensammlung, N 20. The photographs mentioned in note 105, as well as numerous preserved traces of the coating, confirm beyond doubt an extensive coloring of the surface.

94 K. Kluge, *Die antike Erzgestaltung und ihre technischen Grundlagen* (Berlin, 1927), p. 229.

95 For more on the corrosion layers, their coloring, and their location, as well as the swamp patina,

see U. Peltz, "Oberfläche und Patina," in Peltz and Schalles, *Xantener Knabe* (note 3), pp. 37–38, pp. 37–38, fig. 1.

96 F. Fiedler, "Die Bronzestatue des jungen Bacchus von Lüttingen," *Bonner Jahrbücher* 26 (1858), p. 140.

97 Fiedler, "Bronzestatue des jungen Bacchus" (note 96), pp. 150–51.

98 Pernice,"Untersuchungen zur antiken Toreutik" (note 78), p. 222, n. 25.

99 Fiedler, "Bronzestatue des jungen Bacchus" (note 96), p. 150. Fiedler supports his view with further examples of ancient bronzes without corrosion whose authenticity was unquestioned; see Fiedler, "Bronzestatue des jungen Bacchus" (note 96), p. 151. His editors add: "That the ancients not only knew that bronze did not oxidize in water but made practical use of that knowledge in shipbuilding is confirmed by an obscure passage in Vegetius"; see Fiedler, "Bronzestatue des jungen Bacchus" (note 96), p. 151, editor's note. Vegetius writes: "Thus a *liburna* is built mainly of cypresses or spruce or of larches and firs; and better that they be fitted together with bronze nails rather than iron ones; even though its cost may seem considerably greater, this is compensated for by its greater durability; for iron nails corrode in time, and moisture hastens the rusting, however bronze nails maintain their characteristic strength even in seawater." See F. L. Müller, *Publius Flavius Vegetius Renatus: Abriss des Militärwesens* (Stuttgart, 1997), p. 217 (4.34.2–3).

100 Friederichs, "Xantener Erzfigur" (note 13), p. 2.

101 Friederichs, *Geräthe und Bronzen im Alten Museum* (note 19), p. 379. The recently reconstructed situation of the find follows this suggested position; see Schalles, "Auffindung und Erwerb" (note 11), p. 4, fig. 3.

102 *Verzeichnis der antiken Skulpturen* (note 14), p. 3, no. 4; *Beschreibung der antiken Skulpturen* (note 14), p. 5, no. 4.

103 For example, H. Möhl, *Grundriss der mechanischen Technologie* (Kassel, 1869), p. 76.

104 Gouges formed by grinding can be found all over the surface. Some, seemingly fresh, were created only after the excavation. The effect of the Rhine's gravel is especially apparent at the break in the right arm; originally sharp-edged, it is now rounded. Thanks to its abrasion the locks of hair, fingers, toes, and nipples do not stand out in such high relief as they did in antiquity; see Peltz, "Oberfläche und Patina" (note 95), p. 38.

105 Furtwängler, *Sammlung Sabouroff* (note 66), pls. 8–11.

106 Kekulé, *Archäologische Bemerkungen* (note 72), p. 68.

107 Furtwängler, *Sammlung Sabouroff* (note 66).

108 *Verzeichnis der antiken Skulpturen* (note 14), p. 1, no. 1.

109 *Beschreibung der antiken Skulpturen* (note 14), p. 1, no. 1.

110 E. Schraudolph, "Die Restaurierung der Friese vom Pergamonaltar," *Jahrbuch der Berliner Museen* 38 (1996), p. 174.

111 The treatment of bronzes and their bases is documented by invoices from Freres to Wilhelm von Bode; see SMB-ZA (Staatliche Museen zu Berlin, Zentralarchiv), IV/NL Bode 1892.

112 Hermann Born ascribes this to a loosening of the corrosion layers beneath the ancient surface level on account of deposits of chloride. When the crust was removed, the entire corrosion layer was removed along with it; see Born, "Restaurierungen im 19. und 20. Jahrhundert" (note 74), pp. 6–7.

113 Kekulé, *Archäologische Bemerkungen* (note 72), p. 68. Wolf-Dieter Heilmeyer speaks of a radical second cleaning; see Heilmeyer, *Jüngling von Salamis* (note 1), p. 4.

114 Born, "Restaurierungen im 19. und 20. Jahrhundert" (note 74), pp. 6–7.

115 Born, "Restaurierungen im 19. und 20. Jahrhundert" (note 74), p. 7; H. Born, "Die Suche nach der antiken Oberfläche," in Heilmeyer, *Jüngling von Salamis* (note 1), p. 31. In the restoration in 1985 the filler was removed with the surface impurities; see Born, "Restaurierungen im 19. und 20. Jahrhundert" (note 74), pp. 7–10.

116 The sulfide patina on the Youth from Salamis, as on other large bronzes, is considered to be an intentional patination; see Born, "Suche nach der antiken Oberfläche" (note 115), p. 31; W.-D. Heilmeyer, "Zur Oberfläche antiker Grossbronzen," in *Das Wrack: Der antike Schiffsfund von Mahdia*, ed. G. Hellekemper Salies, exh. cat. (Cologne: Rheinland Verlag, 1994), vol. 2, p. 801, figs. 1, 2; and Heilmeyer, *Jüngling von Salamis* (note 1), pp. 79–80.

117 The statue's interior has few traces of a sea crust. Heilmeyer assumes that the presence of the casting core or a filling of sand made the interior inaccessible to marine deposits; see Heilmeyer, *Jüngling von Salamis* (note 1), p. 3.

118 Kekulé, *Archäologische Bemerkungen* (note 72), p. 68.

119 The chloride paratacamite and oxide cuprite have been identified; see Heilmeyer, *Jüngling von Salamis* (note 1), pp. 13–14.

120 See, most recently, Born, "Suche nach der antiken Oberfläche" (note 115), p. 30, pls. 16a–b.

121 Kekulé, *Archäologische Bemerkungen* (note 72), p. 69, ill.

122 Kekulé, *Archäologische Bemerkungen* (note 72), pp. 68–69; also Heilmeyer, *Jüngling von Salamis* (note 1), p. 3.

123 Peltz, "Technischer Vergleich" (note 6), pp. 129–34, figs. 15–22; for the Youth from Salamis, figs. 21a–b.

124 Presumably the head became detached only beneath the chin along the seam with a straight edge, and arbitrary breaks or completely corroded sections were created in the other spots. In any case, only the right side of the neck shows signs of increased pressure as the head was pried off.

125 The shiny metal depressions suggest the loss of inlays, presumably silver, only after the statue's discovery; they were probably still present after it was purchased by Saburov; see Kekulé, *Archäologische Bemerkungen* (note 72), p. 60; Heilmeyer, *Jüngling von Salamis* (note 1), p. 4.

126 K. Kluge, Report on the condition of the Hypnos from Jumilla, Berlin, Archiv Antikensammlung, Nachlass Neugebauer, N. There is no indication of the composition of the corrosion in the inventory (Inventory no. 16, no. 1542), the acquisition announcement (Duhn, "Archäologische Gesellschaft zu Berlin" [note 50] , p. 162), or the subsequent entry on the new acquisition (Watzinger, "Erwerbungen der Antikensammlungen" [note 50], pp. 32–33, fig. 11).

127 Kluge, Report on the condition of the Hypnos from Jumilla (note 126).

128 Berlin, Fotoarchiv Antikensammlung, inv. Sk. 1941, 1–4; Sk. 1109a–d. For the dating, see note 62 above.

129 Communications from Karl Anton Neugebauer to W. Waetzoldt, general director of the Staatliche Museen zu Berlin, 1931, Berlin, Archiv Antikensammlung, Nachlass Neugebauer, N. Hans Tietz, the second permanently employed metal restorer at the Antiquarium, worked as a goldsmith, assistant restorer, and restorer on Berlin's Museum Island from September 1, 1921, to July 18, 1945; see SMB-ZA (Staatliche Museen zu Berlin, Zentralarchiv), II/VA8784.

130 For a detailed discussion, see Rohnstock [Peltz], "Hypnos von Jumilla" (note 4), p. 558.

131 Watzinger, "Erwerbungen der Antikensammlungen" (note 50), p. 32.

132 Geyer, "Bewegliche Sockel für antike Statuen" (note 18).

ILLUSTRATION CREDITS
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Figs. 8.3, 8.8, 8.12, 8.16, 8.24, 8.26: J. Laurentius, Staatliche Museen zu Berlin, Antikensammlung
Figs. 8.6, 8.7, 8.19–8.22, 8.25: U. Peltz, Staatliche Museen zu Berlin, Antikensammlung
Fig. 8.23: A. Hübner, Staatliche Museen zu Berlin, Antikensammlung

9 | The Bronze Statue of Trebonianus Gallus in the Metropolitan Museum of Art
Restoration, Technique, and Interpretation

Seán Hemingway, Sarah McGregor, and Dylan Smith

Introduction

The subject of this paper is one of the few nearly complete Roman bronze statues of the third century preserved today. It is an imposing portrait of a Late Roman emperor (figs. 9.1a–c), most likely Trebonianus Gallus (r. A.D. 251–253). After its discovery in the first quarter of the nineteenth century and early restoration in Florence, the statue was considered a masterpiece of Roman bronze sculpture and a major acquisition when the Metropolitan Museum of Art, New York, purchased it in 1905. In more recent years, however, because of the statue's damaged state, only partially rectified by a complex history of restorations, its integrity has been questioned by scholars who have wondered how much of it is truly ancient and belongs together. This paper presents an account of the statue's modern history and sequence of restoration campaigns, as

FIGURES 9.1a–c. Trebonianus Gallus, A.D. 251–253. Bronze, H. 241.3 cm (95 in.). New York, Metropolitan Museum of Art, Rogers Fund, 1905 (inv. 05.30). Three views of the statue in its present state.

well as the results of a technical and art-historical examination begun in 2002 in preparation for the statue's reinstallation in the Roman galleries at the Metropolitan Museum, which were reopened in 2007.[1] A primary goal of this recent study was to look beneath the uniform heavy black coating applied during Alfred André's early-twentieth-century restoration and to establish the extent of ancient fragments and whether these fragments were all from a single statue. The investigation also revealed evidence of ancient manufacture and of methods utilized in the statue's nineteenth- and early-twentieth-century restoration campaigns.

Provenience and Ownership History

The statue was excavated, in fragments, in Rome in the early nineteenth century, in a vineyard near the basilica of Saint John Lateran.[2] One gains a general impression of this area in the seventeenth century from a drawing in the Lehman Collection of the Metropolitan Museum (fig. 9.2). The excavations were carried out by Count Nicholas Demidoff (1773–1828), with the authorization of Pope Pius VII (r. 1800–23), likely sometime between 1819 and 1823, when Demidoff was living in Florence as the Russian ambassador to the royal court of Tuscany.[3] At the time it was thought that the area where the statue was found was a large Roman building, and a fragmentary

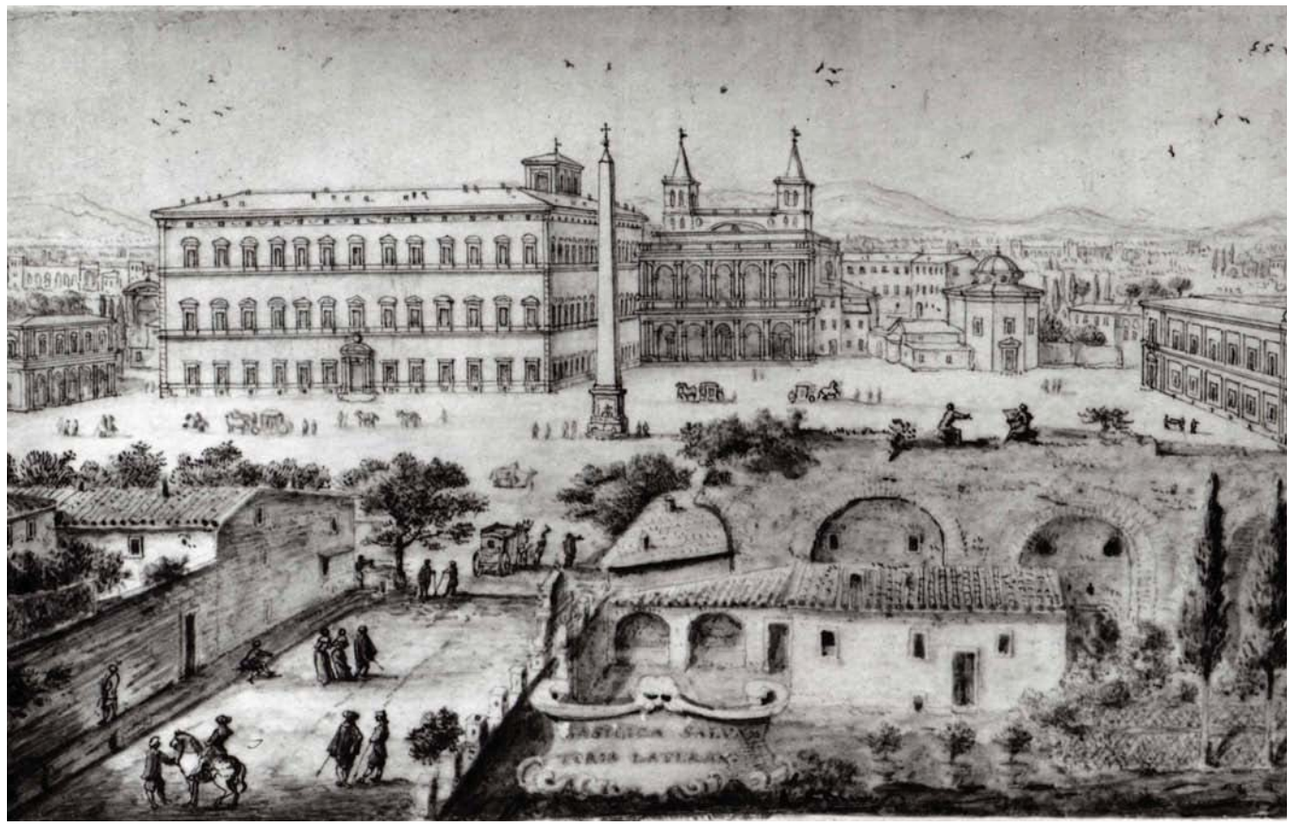


FIGURE 9.2. Lieven Cruyl (Flemish, 1634–1720), *View of Lateran, Rome,* ca. 1672–73. Pen and brush and gray and brown ink, gray and brown washes, some watercolor and white gouache, on vellum, 8.4 × 14.2 cm (3 5/16 × 5 9/16 in.). New York, Metropolitan Museum of Art, Robert Lehman Collection, 1975 (inv. 1975.1.577)

base was reported to have been discovered with the statue but is no longer preserved. The vicinity of Saint John Lateran was the site of the barracks of the personal horse guard of the emperor, the *equites singulares*, and the statue of Trebonianus may well have been set up for this high-ranking class, who held significant power in Rome in the third century A.D.[4] No precise records of the excavation exist and therefore the details cannot be confirmed with any certainty. Demidoff subsequently had the statue restored in Florence.

Demidoff belonged to one of the richest families in Russia. The family had extensive iron mines and was known for its philanthropy and patronage of the arts. Demidoff lived in a sumptuous villa—designed for him by Giovan Battista Silvestri (1796–1873)—that he had built near Florence, called the Villa di San Donato.[5] This is where the statue of Trebonianus was displayed for decades. Demidoff and his son Anatole Demidoff, who inherited the villa and its contents, including the statue of Trebonianus, when his father died in 1828, amassed a major art collection that was showcased at the villa. The Demidoff family holdings included masterpieces by Rembrandt, Rubens, and Titian as well as antiquities and works by living artists.

In 1848 ownership of the statue passed from Anatole Demidoff to the celebrated French Neoclassical architect and sculptor Count Auguste de Montferrand (1786–1858). Montferrand brought it to his home in Saint Petersburg, Russia. Among his many accomplishments, Montferrand was commissioned to create a bronze equestrian monument to Nicholas I, which stands in Saint Isaac's Square in Saint Petersburg. Considered a technical marvel at the time it was made (1856–1859), it is one of the few bronze equestrian monuments to stand on two feet without any other support. A catalogue of Montferrand's art collection was published in 1852. In the introduction, the collection, which included over one hundred ancient statues, was heralded by the author, Bernhard von Köhne, as one of the most important in Saint Petersburg, second only to the Hermitage.[6] The statue of Trebonianus, identified then as Julius Caesar, was listed first and was considered to be the greatest masterpiece in Montferrand's collection. It was illustrated in four detailed drawings, which make up two of the twenty-two plates in the book. The drawings in Köhne's monograph are valuable documents that provide a good sense of what the nineteenth-century restoration of the Trebonianus looked like (fig. 9.3). Since they are drawings, though, one wonders how accurate they are. Fortunately, there exists a photograph from 1853 of the statue as it was displayed in the courtyard of Montferrand's home in Saint Petersburg (fig. 9.4) and to a large extent it seems to corroborate the restoration presented in the drawings.

After Montferrand died, in 1858, his art collection was sold by his heirs. The statue of Trebonianus was purchased by the Parisian art dealers Rollin and Feuardent in 1896.[7] When the statue was acquired by the Metropolitan Museum in 1905, C. M. Fitzgerald reported in the first issue of the museum's *Bulletin* that the statue had fallen apart when the Parisian dealers bought it. They

FIGURE 9.3. Drawings of the Trebonianus Gallus as restored in the nineteenth century, three-quarter view and back view. From Bernhard von Köhne, *Mémoires de la Société impériale d'archéologie*, vol. 6, *Musée de sculpture antique de Mr. de Montferrand* (Saint Petersburg, 1852), pl. 1

FIGURE 9.4. Photograph of the Trebonianus Gallus in the courtyard of Auguste de Montferrand's home in Saint Petersburg, 1853

brought it to Paris and had it unsuccessfully restored there by a man named Penelli who worked at the Musée du Louvre. Rollin and Feuardent then had it restored by the distinguished Alfred André (1839–1919), who completed a new restoration in eighteen months sometime between 1902 and 1905. Since 1905 the statue has been a permanent fixture in the Metropolitan Museum's Roman art galleries (fig. 9.5).[8]

It seems that after the Metropolitan Museum's acquisition, the statue of Trebonianus began to lose much of the acclaim it had enjoyed in the previous century. The reevalulation can be directly linked to the figure's distorted proportions and André's restoration, which made it difficult to determine which parts were ancient. Critical to the understanding of the statue is the fact that once a bronze statue has been damaged and then corroded during centuries of burial, it can be difficult, if not impossible, to restore it to its original appearance. An extreme example is the irreparably damaged Hellenistic head of a young girl from Olympia, which is displayed next to a restored copy in the Archaeological Museum at Olympia, enabling the viewer to see the dramatic transformation.[9] Early restorers faced technical challenges when assembling a statue with damaged and missing fragments and often had to rely on their own aesthetic judgment to best assemble the work. The statue of Trebonianus is, unfortunately, another example where reassembly from many broken fragments has greatly changed it from its original appearance despite the well-intentioned efforts of the last restoration campaign.

Prior to this study these anomalies led many scholars to question the statue or simply to shy away from it. Even the Metropolitan Museum's former director Thomas Hoving wrote disparagingly about it in 1996 in a book on fakes:

> There's a life-size standing portrait of a man called the emperor Geta which is the ugliest work of art in the Met. It's so unattractive that when I was director I wanted to relegate it to storage for fear that young visitors would have bad dreams. His patina is the color of offal. His anatomy is bulbous, syrupy, soft, waxy, and unconvincing. His pinhead is set incongruously into this ungainly body with too-long legs and the stomach muscles of an octogenarian. I'm convinced this is a phony concocted by that master of masters, Wolfgang Helbig, and made by a team of fakers in Orvieto.[10]

Götz Lahusen and Edilberto Formigli note, in their monumental book on Roman bronze portrait sculpture, that the statue is in need of a thorough technical examination before much more can be said about it, and Christopher Hallett barely discusses it at all in his book on Roman male nude statuary.[11]

FIGURE 9.5. Trebonianus Gallus before treatment in 2002

Technical Examination

To address the questions surrounding the Trebonianus Gallus, an in-depth technical examination and treatment was undertaken in preparation for the statue's reinstallation in the Metropolitan's new Roman galleries. Evidence was collected from the statue using a number of methods, including visual examination, exploration with a videoprobe, radiography, and elemental analysis of the metal. Close visual study revealed many aspects of the construction. The interior of the sculpture was also examined directly after three panels of restoration metal were removed from the neck (see below fig. 9.16), under the left forearm, and the lower back (fig. 9.6). The panel locations were chosen so that complete visual access of the statue could be had with a videoprobe—a digital camera with a high-intensity light mounted at the end of a long, snaking cable.[12]

Radiography using a high-energy gamma source revealed additional details of manufacture and restoration hidden inside the bronze.[13] Fifty-two exposures were taken from various angles to help interpret the particularly complex repairs and restorations. Some radiographs were typical double-walled exposures, produced by placing the film on the exterior of the bronze and shooting through both sides. A series of single-walled radiographs were also produced by inserting narrow strips of film through the opening in the lower back and holding the film in place against the interior wall with foam. After processing, the radiographic-film strips were scanned and digitally assembled into more easily interpreted images of the chest and back (fig. 9.7).

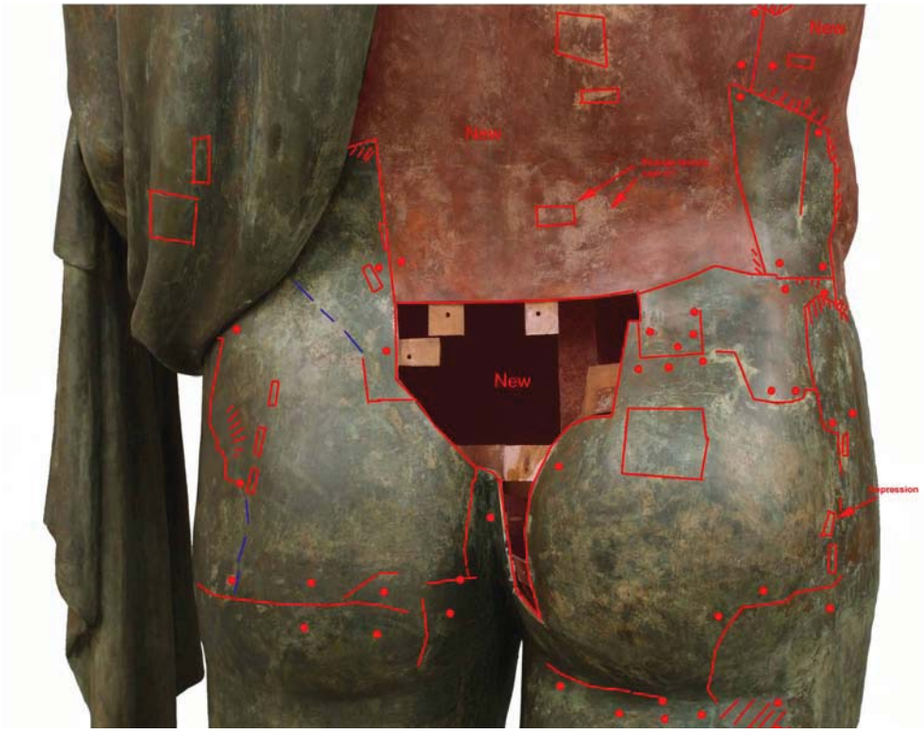


FIGURE 9.6. Lower back, showing the opening after removal of a restored metal panel. Brass straps used in the restoration are visible around the edges of the opening. This image also illustrates the mapping that was done to record areas of restoration, patches, and other points of interest related to manufacture and the restoration.

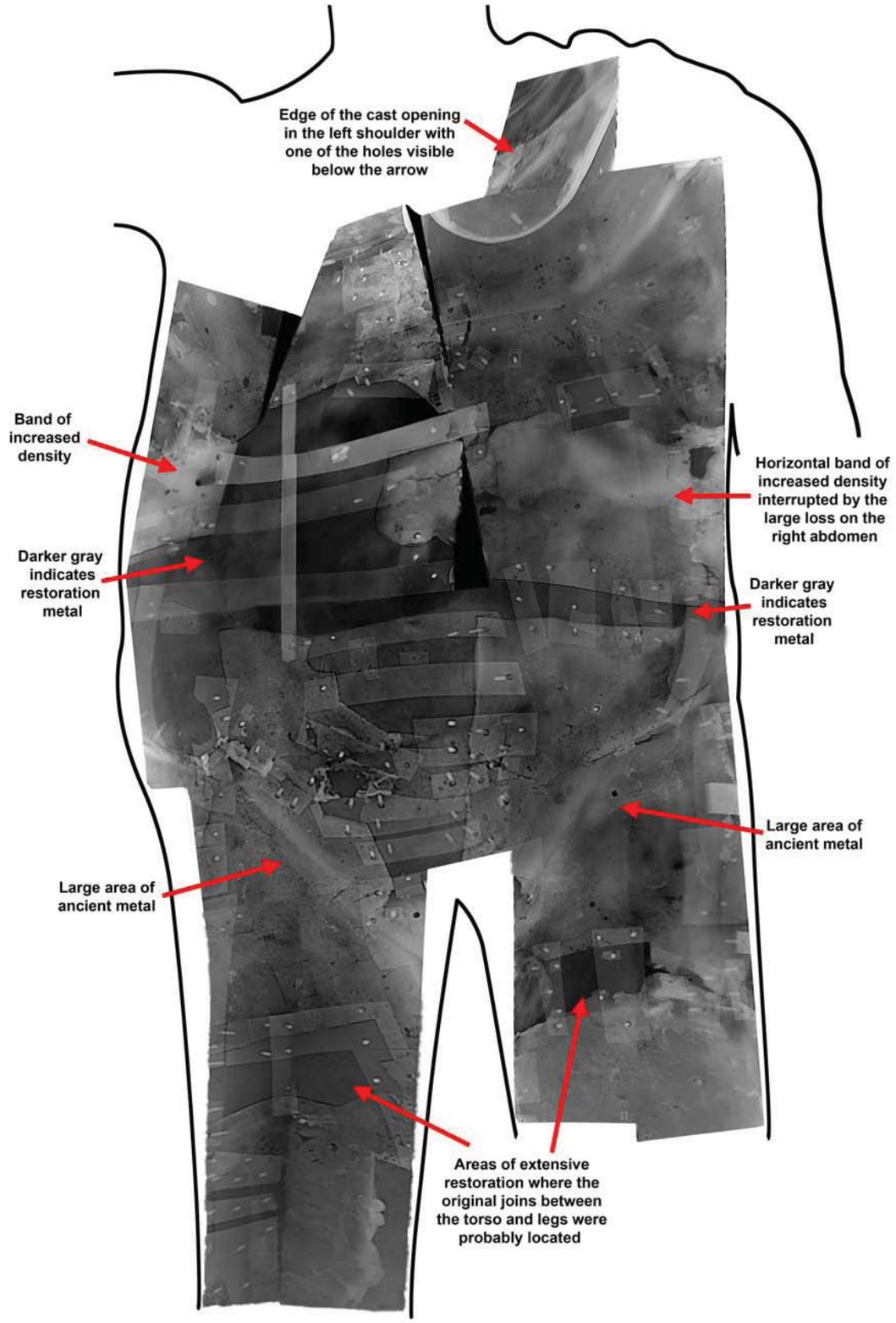


FIGURE 9.7. Composite radiograph of torso

A limited study of the metallic alloys of ancient and restored areas was also undertaken. Thirteen microsamples were analyzed by scanning electron microscopy-energy dispersive spectroscopy (SEM-EDS), primarily from areas of original ancient metal (table 9.1).[14] Additional surface analysis was performed on parts of the restoration metal using X-ray fluorescence spectrometry (XRF).[15]

Considered together, the evidence collected indicates that close to 75 percent of the statue is ancient and that almost all the fragments are associated (fig. 9.8). The original portions include most of the head, the upper back and upper chest and the left side of the torso, the right arm, the left forearm, the entire left leg, and the right leg, except the foot. These sections are assembled from various large and small ancient fragments with relatively small metal fills. Although the left foot is ancient, certain questions remain about its relationship to the rest of the figure. Major areas of restoration include the cape, left shoulder, lower back, right and lower abdomen, and the right foot. The original joins between the individually cast sections were difficult to find because many of the most extensive repairs occur in these areas. Therefore the presence of the repairs complicated the investigation and our ability to determine the relationship of the individually cast sections. In spite of this, there were enough remaining connections and technical associations between ancient fragments to indicate that the statue is not a pastiche and that its stance and the orientation of the limbs are close to the original conception of the figure.

FIGURE 9.8. Front and back view of statue showing in red the areas that are restored. These images were taken after the 2002 treatment.

TABLE 9.1. Elemental Analysis of the Trebonianus Gallus (weight %)

No.	SEM-EDS sample site	Cu	Sn	Pb	Zn	As	Ag	Sb	Fe	Probable date
1	Left hand	76.5	8.2	15.1	bdl	bdl	bdl	bdl	0.1	ancient
2	Right hand	74.1	11.7	13.8	bdl	bdl	bdl	bdl	0.3	ancient
3	Left ear	69.5	7.3	23.0	bdl	bdl	bdl	bdl	0.1	ancient
4	Left buttock	68.5	6.5	24.8	bdl	bdl	bdl	bdl	0.2	ancient
5	Right calf (2)	80.7	7.6	10.7	0.5	bdl	bdl	bdl	0.6	ancient
6	Top of neck opening	78.8	2.3	17.0	1.1	bdl	0.4	bdl	0.3	ancient
7	Front of neck opening	80.0	0.9	18.2	0.4	bdl	0.3	bdl	0.1	ancient
8	Upper back (1)	85.2	9.5	4.8	bdl	bdl	bdl	bdl	0.4	?
9	Cape	77.3	8.3	14.2	bdl	bdl	bdl	bdl	0.1	modern
10	Left foot	80.2	5.4	12.0	1.2	0.3	bdl	0.6	0.2	ancient
11	Right foot	90.8	5.3	3.2	0.3	bdl	bdl	bdl	0.3	restored
12	Right calf (1)	63.7	18.0	17.3	0.4	bdl	bdl	bdl	0.5	w/solder?
13	Upper back (2)	89.0	7.2	3.1	0.3	bdl	bdl	bdl	0.4	?
	XRF surface site									
14	Restoration plate, back	94.5	1.6	3.4	bdl	bdl	bdl	bdl	bdl	restored
15	Restoration plate, neck	95.9	1.9	1.9	bdl	bdl	bdl	bdl	bdl	restored
16	Interior of left arm	57.2	6.2	35.7	bdl	bdl	bdl	bdl	bdl	ancient?
17	Solder, neck plate	3.4	22.8	71.9	1.7	bdl	bdl	bdl	bdl	restored

Note: Elemental analysis was done on seventeen areas on the statue. Thirteen microsamples were analyzed using energy dispersive X-ray spectrometry in the scanning electron microscope (SEM-EDS) to determine alloy composition. Four microsamples were analyzed using X-ray fluorescence spectrometry (XRF). Trace amounts of elements may be present, but at levels below the detection limits for SEM-EDS and XRF under these operating conditions (bdl). The limits are estimated at approximately 0.1 percent for most elements, but slightly higher, approximately 0.3 percent, for silver, tin, antimony, and zinc. Analyses were performed by Mark T. Wypyski, research scientist, Department of Scientific Research, Metropolitan Museum of Art, New York.

The results were not conclusive, but generally split into two groups, high lead and low lead, with the former most likely to be consistent with late Roman alloys. Partial mineralization of the metal from the sample sites may have altered the apparent ratio of the elements detected. Some of the samples were taken near restoration panels, presenting the possibility of contamination from solder and other materials. However, this appears to have occurred only in the sample from the right calf (1), which had a high tin content, probably from tin-lead solder.

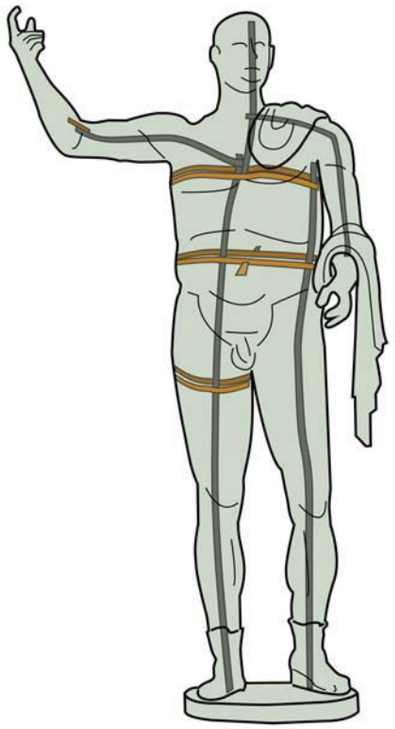


FIGURE 9.9. Diagram of armature. The gray lines represent the iron armature and the orange lines represent the brass straps added by Alfred André for reinforcement.

Restoration History

Before exploring the interrelated technical evidence of the extant ancient fragments, the statue's condition, and how it was originally made, it is necessary to understand its complex restoration history. As described above, at least three complete restorations are known: in Florence, between 1819 and 1823; at the Louvre, sometime after 1896; and by Alfred André, between 1902 and 1905 (see fig. 9.5). As will be explained, the repairs identified appear to be primarily associated with the first and third campaigns. Finally, the most recent conservation treatment, undertaken between 2002 and 2006, is described.

To assemble the fragments and allow the figure to stand, the first restoration must have introduced an armature (fig. 9.9). The iron armature that now supports the Trebonianus Gallus is corroded and may date from the first restoration campaign (fig. 9.10). Display of the statue in the open courtyard of Count Montferrand's home in Saint Petersburg could account for the weathering of the iron. The nineteenth-century restoration of the Apollo Saettante from Pompeii (Naples, Museo Archeolgico Nazionale) utilized a similar kind of iron armature strapped to the body by means of screws.[16]

A number of large cast-metal fills are present on the Trebonianus Gallus, including the cape, the left shoulder and upper arm, the genitalia and panels in the lower back, the right and lower abdomen, and the right ear. The cast fills were probably introduced during the first restoration in Florence or possibly in an undocumented campaign by Count Montferrand himself, given that he was an accomplished sculptor and engineer. Such restorations were a common practice in the nineteenth century and similar examples are discussed elsewhere in this volume.[17] Furthermore, the drawings and photograph produced while the statue was on display in Count Montferrand's home depict it as complete and strongly suggest that the restored cast parts of the Trebonianus were already present and not made by André (see figs. 9.3–9.4). This is further corroborated by Fitzgerald's report of 1905, which states that when André received the work he found that "excepting a few square inches of the torso, nothing of the original was lacking."[18] The restored parts have a smoother, more coppery and uncorroded surface on the interior in comparison with the ancient parts (fig. 9.11). In the radiographs, the restored parts are lower in density and lack the irregularities present in the ancient fragments (see fig. 9.7). Restoration fills on the lower back and neck were analyzed and found to be cast copper with a small amount of tin and lead (see table 9.1, samples 14, 15). Solder from the edge of the restored neck panel was also analyzed and found to be lead-tin solder (see table 9.1, sample 17). A sample from the cape was, surprisingly, found to be a highly leaded bronze (see table 9.1, sample 9), similar to ancient alloys, but it is possible that the sample was taken from an unrecognized ancient part incorporated into the restoration.

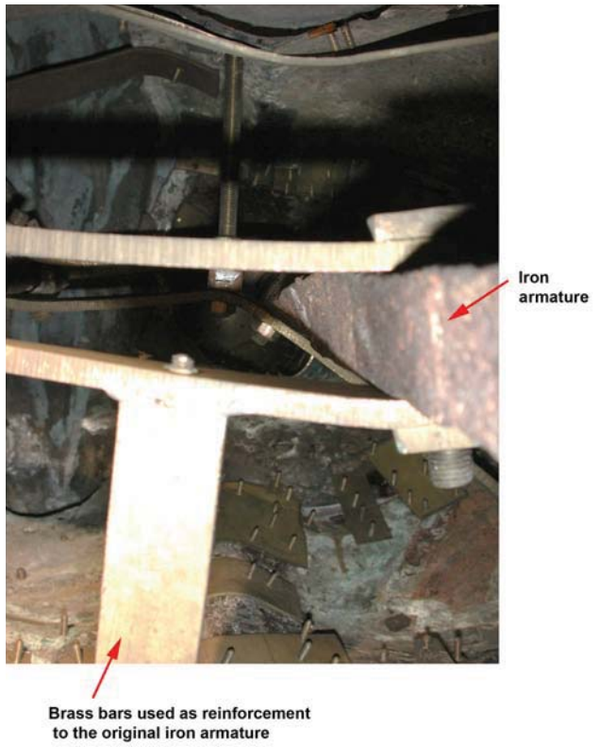


FIGURE 9.10. Interior photograph taken with a hand-held camera showing the iron armature and Alfred André's added brass straps

FIGURE 9.11. Interior photograph of torso taken with a hand-held digital camera showing the difference between the ancient metal and the restoration metal

There was no evidence of restoration material found within the statue that could be directly attributed to the second campaign. To date, the only documentation about this restoration appears in the Metropolitan Museum's *Bulletin,* in its mention of Penelli, the restorer at the Louvre, who reassembled the statue but whose restoration fell apart shortly after. Although the documentation of André's restoration of the Trebonianus Gallus is limited, records of his other restorations provide additional insight. In 1901, André had been chosen to restore the Antikythera Youth, a Greek bronze statue of the fourth century B.C. and one of the most important works that came to light in the first underwater excavation of an ancient shipwreck in Greece, in 1900. André was brought to Athens and over the course of forty days he put the statue back together at the National Archeological Museum (fig. 9.12).[19] It is interesting to note that the restoration done by André was later questioned and the statue was taken completely apart under the direction of the Greek archaeologist Christos Karousos in the late 1940s and 1950s.[20] It is essentially Karousos's restoration that can be seen today in Athens. Although André's restoration was not dramatically different from Karousos's, in André's Youth there is a slight shift in the head and the torso is also slightly elongated. These subtle differences highlight how a restoration can affect the look of a statue.

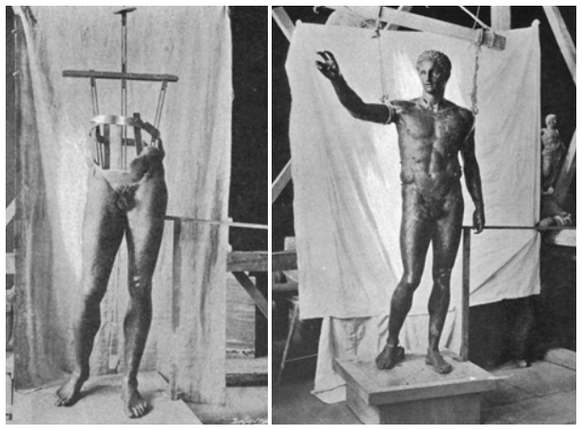


FIGURE 9.12. Two photographs of the Antikythera Youth during its first restoration. The image on the left shows the lower half of the statue assembled on the armature using metal straps. The image on the right shows the statue fully assembled. From Edward Vicars, "A Rescued Masterpiece: The Finds at Anticythera," *The Pall Mall Magazine* 29 (1903), 558–59

One of the main reasons André's restoration of the Antikythera Youth was questioned was because he applied an opaque black coating over the entire surface that masked details of the ancient bronze surface as well as modern joins and restorations. André applied a similar coating, a mixture of wax and paint, to the statue of Trebonianus, which raised the same doubts about what was ancient and what was not (see fig. 9.5). Unlike the Antikythera Youth, the Trebonianus had no clearly documented archaeological context, making this determination even more critical.

Besides the opaque surface coating, the clearest evidence of André's restoration is his characteristic technique of utilizing brass straps and threaded rods to unite the ancient fragments. Rolled sheet brass was cut in various sizes and shaped to conform closely to the contours of the interior (see fig. 9.11). The brass straps were held tightly to the interior of the bronze wall so that the threaded rods could be twisted from the exterior through predrilled holes in the bronze wall and into the straps. André rarely added a fastener such as brass nuts to the rod. Only in a few areas did he apply lead solder and brown putty in addition to the straps and threaded rods to hold fragments together. The heads of the rods were then cut flush to the exterior surface and concealed with putty followed by the black coating. The final filing to remove the rods from the exterior surface may provide at least one explanation for the absence of burial corrosion around the perimeter of most of the ancient fragments (fig. 9.13). In addition to the brass straps and rods, André attached horizontal brass bars to brace large repaired sections of the statue wall to the iron armature for additional reinforcement (see fig. 9.10).[21]

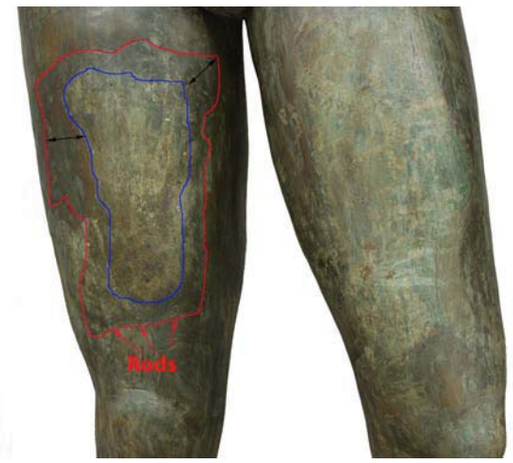


FIGURE 9.13. Detail of right thigh. The red outline indicates the actual size of a large ancient fragment, and the area between the red and blue lines is where the patina has been removed.

The most recent campaign of conservation treatment, begun in 2002, did not alter the existing armature or placement of any of the restored sections. Rather, the focus was to establish the condition of the sculpture and how much of it is ancient. The opaque black coating was removed from the statue except for an inconspicuous area on the top of the statue's right shoulder that is preserved for possible future analysis. Considerable inpainting of the modern restoration metal was then undertaken to present a uniform appearance but without obscuring the patches and modern joins. Finally, a thin coating of wax was applied to protect the surface (see figs. 9.1a–c).

Ancient Fragments

Removal of André's black surface coating during this investigation allowed the actual size and extent of ancient fragments to be more clearly understood. In addition to the surface examination, evidence on the interior of the sculpture seen through the videoprobe and radiographic images helped us interpret the relationship between the various ancient fragments in the head, arms, torso, legs, and feet.

The small size of the head relative to the body has long raised doubts about whether it is original to the statue. However, ancient Roman sculptures are known to exhibit what now seem to be jarring juxtapositions of heads and bodies. Two good examples are the bronze statue of Claudius from the so-called Basilica at Herculaneum (Naples, Museo Archeologico Nazionale) and the statue of a Flavian woman in the guise of Venus in the collection of the Ny Carlsberg Glyptotek in Copenhagen.[22] However, such discrepancies in scale can also result from the efforts of eighteenth- and nineteenth-century restorers, who strove to present complete statues. Terrible pastiches were created, such as two works in the Lansdowne collection: the Discobolus torso that was turned into a Diomedes Stealing the Palladion by the restorer Bartolomeo Cavaceppi (Wiltshire, Bowood House) and a statue of Tyche-Fortuna (now at the Metropolitan) that has an incongruous head of a Flavian lady from a restoration in the late eighteenth century (fig. 9.14).[23]

On the statue of Trebonianus, the extensive restoration at the neck, including trimming of the ancient break edges, added to the difficulty of establishing the relationship of the head to the torso (fig. 9.15). In the radiograph of the neck there are two horizontal breaks at the bottom and top of the neck. Numerous brass straps bridge the breaks to secure the head to the neck and the neck to the torso. Although interrupted with these breaks, the metal through the head and neck and into the torso is ancient. In the radiograph, the density of the ancient fragments on either side of the repaired neck break is consistent, and the diameter and shape of the isolated neck fragment matches the opening of the head and that of the torso. Analysis of a sample from the left ear was found to be highly leaded bronze consistent with ancient Roman alloys (see table 9.1, sample 4). Two samples from the right side of the neck were also highly leaded but with much lower levels of

FIGURE 9.14. Marble statue of Tyche-Fortuna restored with the portrait head of a woman, ca. A.D. 85–90. 190.5 × 66 × 58.4 cm (75 × 26 × 23 in.). New York, Metropolitan Museum of Art, Fletcher Fund, 1961 (inv. 61.82.1, .2)

FIGURE 9.15. Radiograph of back of the neck showing the trimmed break line at the base of the neck with the straps bridging this break. There is another repaired break line at the top of the neck. The red arrow in the lower left-hand corner indicates the straight cast edge of the torso opening on the back.

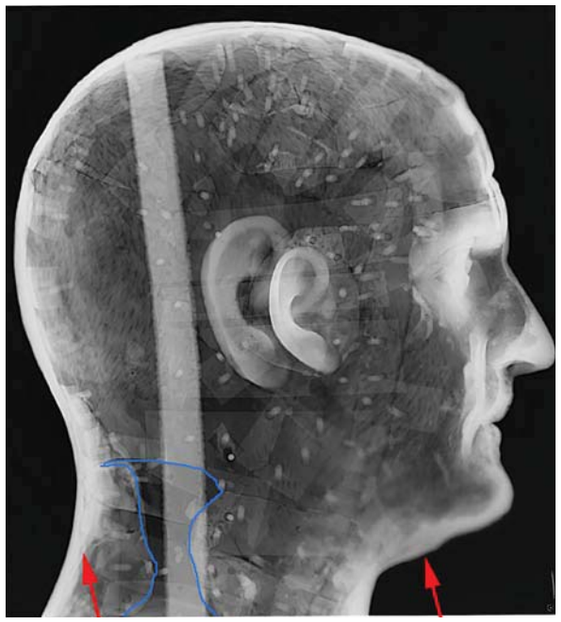


FIGURE 9.16. Radiograph of head, right profile. The red arrows point to the areas where the metal appears slightly thicker and more irregular, which could be the remains of excess metal from a flow weld at the neck. The blue outline shows where the panel of restoration metal was removed for access into the head with the videoprobe.

FIGURE 9.17. Composite radiograph of right arm. A red arrow points to the runs of wax seen along the length of the forearm. The second red arrow indicates an area of restored metal on the top of the shoulder. The yellow arrows show the smaller-sized core-pin holes, approximately three millimeters square.

tin (see table 9.1, samples 6, 7). The sampled fragments appear to be ancient; it is possible that the difference in alloy reflects a distinct pour of metal used to join the head to the neck. Although evidence of the original join has been obliterated by the restoration, there appears to be excess metal at the base of the neck and under the chin, which could indicate excess metal from an original join (fig. 9.16). Thus our conclusion is that the head does belong to the body.

Although fragmentary, the majority of the right arm, including the hand, is ancient; the exception is a large section on top of the shoulder that has been restored (fig. 9.17). There is an intact ancient fragment that continues from the underside of the arm, through the armpit, and into the chest, confirming that the upper arm belongs to the torso and that its position is generally correct. A sample from the right hand was found to be leaded bronze and is generally consistent with the head (see table 9.1, sample 2).

The left shoulder and upper arm comprise a single piece of restored metal that tapers into a collar. The collar was made as a method of attachment to the ancient forearm (fig. 9.18a). Radiography revealed that the left forearm, including the hand, is ancient. This section is almost completely intact and consists of large ancient fragments. The one area of loss is located on the underside of the forearm. The repaired panel for this loss was removed to allow exploration with the videoprobe, which revealed an unusual feature. Within the forearm there is an irregular U-shaped fragment and elemental analysis suggests that it is ancient (figs. 9.18b–d; see table 9.1, sample 16). The presence of this fragment is not completely understood. It is possible that it was part of the original construction of the statue, with some type of mechanical purpose to support the left forearm from the original cape. Or it may have been incorporated during one of the restoration campaigns. The left forearm does appear to belong to the statue, though it is now

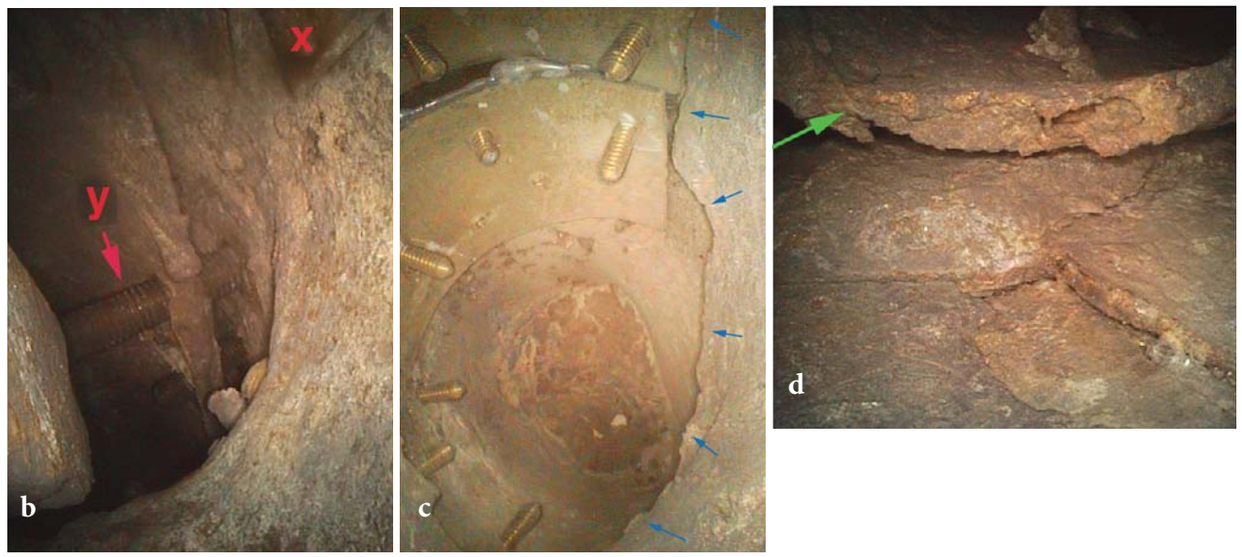


FIGURE 9.18a–d. Radiograph of left shoulder and upper arm showing the modern restoration of the upper shoulder and arm indicated in yellow (a). Three videoprobe images show different views of the internal fragment (b–d). Figures 9.18a and 9.18b are marked with the letters *x* and *y* to show where the location of the same threaded rod and plate is in each image. Figure 9.18c is an image looking into the core material in the base of the hand and the top of the forearm. The internal metal fragment is marked with arrows. Figure 9.18d is an image showing the edge of the internal fragment.

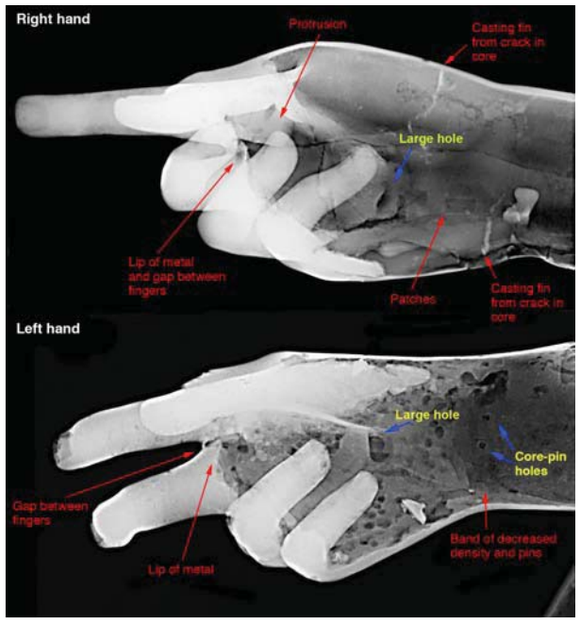


FIGURE 9.19. Radiographs of right and left hands. The radiographs have been enhanced with Lucis Pro 6.0 software.

separated from the torso by restored elements. A sample taken from the left hand was found to be a very similar alloy to that of the right—highly leaded bronze (see table 9.1, sample 1). Radiography and images captured with the videoprobe also revealed that features found in the interior of the left forearm are comparable to those in the right (fig. 9.19; see also fig. 9.27) and that the fabrication of both hands is strikingly similar.

Based on the character of the metal and the corrosion on the interior, the bulk of the torso is clearly ancient (see figs. 9.7, 9.8). Significant repairs have been made to the right side of the stomach and the center of the lower back. Analysis of two samples from the upper back were found to be bronze with a lower level of lead (see table 9.1, samples 8, 13), distinct from the head and, surprisingly, also different from the neck. A remarkable discovery with the videoprobe in the torso was a symbol inscribed in the wax before the figure was cast in bronze (fig. 9.20; see also fig. 9.23d). This mark, cut in the wax working model, is located in the wall directly below the opening into the left shoulder. The symbol looks like an *X*, possibly the Greek letter *chi*, surrounded by circular depressions. A similar letter, a Greek *alpha*, was noted on the interior of a portrait head of a young man in the collection of the J. Paul Getty Museum in Los Angeles (figs. 9.21a–b).[24]

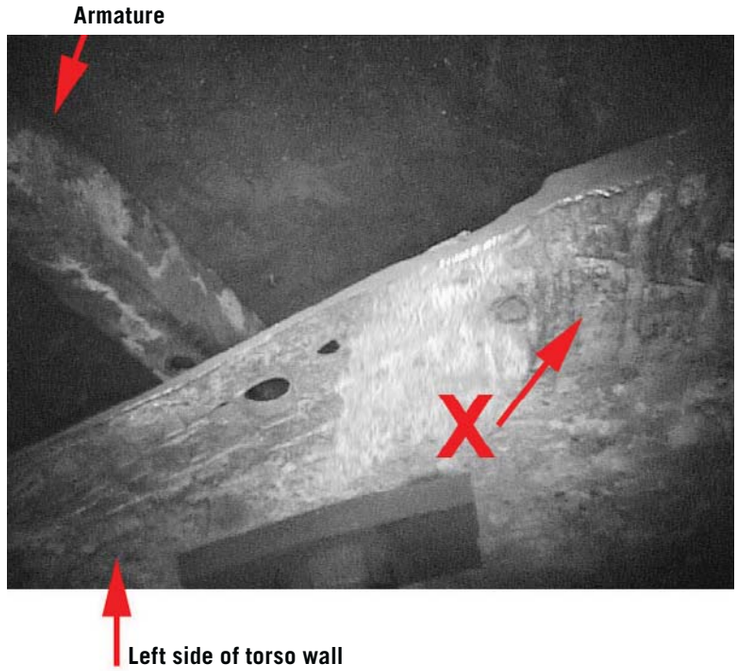
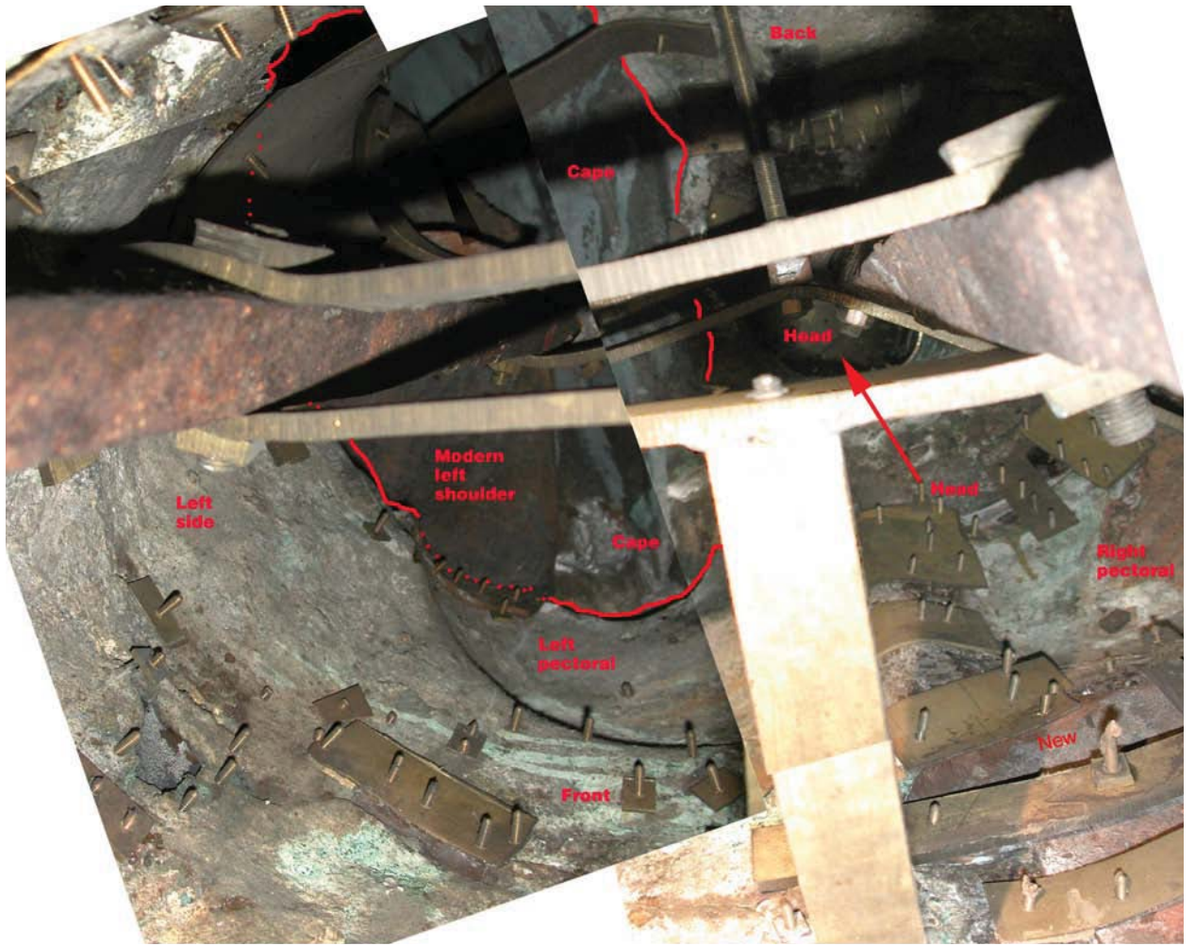


FIGURE 9.20. Videoprobe image showing the *X*, possibly the Greek letter *chi*, surrounded by four circular depressions. In this view, the armature bends over into the left shoulder.

FIGURES 9.21a–b. (a) Bronze portrait head of a young man, 175–300 A.D., H. 26 cm (10¼ in). Los Angeles, J. Paul Getty Museum (inv. 71.AB.458). (b) Detail (interior of neck) showing possible Greek *alpha*

Although the cape now present on the statue is restored, evidence suggests that a cape was present originally. Examination in the upper left side of the chest with the videoprobe revealed an original opening that has a cast edge with what appears to be traces of ancient patina (fig. 9.22). The edge has a smooth surface and an undulating quality along with a slight lip, which is consistent with a cut made through the wax during preparation of the wax working model (figs. 9.23a–b; see also fig. 9.15). The presence of this opening would be expected if a separately cast cape was originally present. Parts of the figure hidden by the drapery would not have been cast—a common practice that was economical in terms of both material and labor.[25] Distributed around the perimeter of the opening, eight circular holes, slightly less than one centimeter in diameter, are found in the metal wall of the torso (see figs. 9.20; 9.23a–b). (Similar holes were found along the draped covered opening in the arms of the Apollo Saettante from Pompeii.)[26] Although their function is not clear, they seem most likely to have been drilled in one of the earlier restoration campaigns to hold the cape.

FIGURE 9.22. A composite of digital photographs that shows the opening in the left upper torso (outlined in red)



FIGURES 9.23a–b. Detail videoprobe images showing some of the holes found along the opening of the torso wall. Figure 9.23a shows three holes found along the vertical line of the torso opening in the back. The interior wall of the modern cape is visible on the right side of the image. Figure 9.23b shows the curved opening behind the lappet of the cape that drapes over the left pectoral. Two additional holes can be seen in Figure 9.20 to the left of the letter X.

FIGURE 9.24. Videoprobe image looking into the interior of the left thigh, where brass straps and rods repair a long break down both the inseam and outer seam of the leg

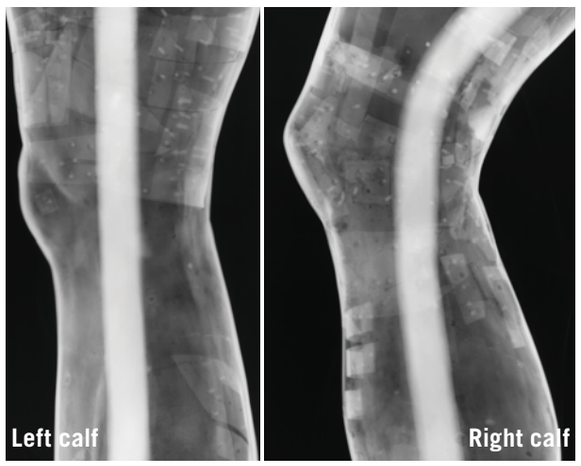


FIGURE 9.25. Radiographs of left and right knees and calves. The iron armature is visible as a wide white line in the center of each leg. The lighter rectangular shapes visible in both legs are brass straps from André's restoration.

A large ancient fragment also connects the lower torso to the thighs, indicating that the positioning of the legs is approximately correct (see fig. 9.7). The groin is extensively repaired and the genitals were found to be entirely restoration. Both thighs consist mainly of ancient metal; the left side consists of a few larger fragments, the right has many smaller fragments. A broad repair is present across the front of both legs where they meet the torso, which probably coincides with the position of original joins that failed (see fig. 9.7). The left thigh is basically split into large intact fragments of the front and back with repairs going down the inseam and outer seam of the leg (fig. 9.24; see also fig. 9.30). Each calf is composed of a large ancient fragment completed with the addition of a few modern patches (fig. 9.25).

The feet of the statue have been questioned based on their relatively small size and because it is unusual for a Roman male figure in heroic nudity to wear shoes. Radiography revealed that the left foot is fitted over the end of the calf, a technique that does not appear consistent with ancient practice (fig. 9.26). A metal sample from the left foot was identified as a leaded bronze, similar to ancient alloys found elsewhere in the figure (see table 9.1, sample 10). The right foot is also fitted onto the calf, but is additionally joined using an interior collar of metal, clearly of modern fabrication (fig. 9.27).[27] The right foot is bronze, but contains much less lead than the left (see table 9.1, sample 11). A seam was noted running down the front and back of the right foot, a feature that would not be expected to remain on an ancient bronze. Unfortunately, plaster poured into the lower legs and feet, probably used to secure the armature during André's restoration, prevented an examination of the interiors that might have resolved the relationship of the left foot to the statue. At present, it appears that the left foot is ancient and that the right foot has been restored using the left foot as a guide. Since the left foot does not join the leg there remains the possibility that it does not belong.

Ancient Manufacture

The Trebonianus Gallus was cast using a copper-tin-lead alloy with a relatively high lead content, consistent with Roman practice, though the alloys identified vary considerably in different parts of the figure (see table 9.1).[28] Distinct alloy compositions can indicate that the statue was cast in as many as eight sections: head, upper torso, lower torso, arms, legs, and the original cape. Large Roman bronzes were cast in sections to keep the amount of molten bronze manageable for handling while it was heated and poured into molds.

The statue was made by the indirect lost-wax casting method. Developed so that the original, full-scale model would not be compromised in the casting process, this method entails multiple stages and was very useful when creating an over-life-size statue in bronze.[29] The original model was sculpted in a pliable medium, such as clay. Then sectional molds or piece molds were made

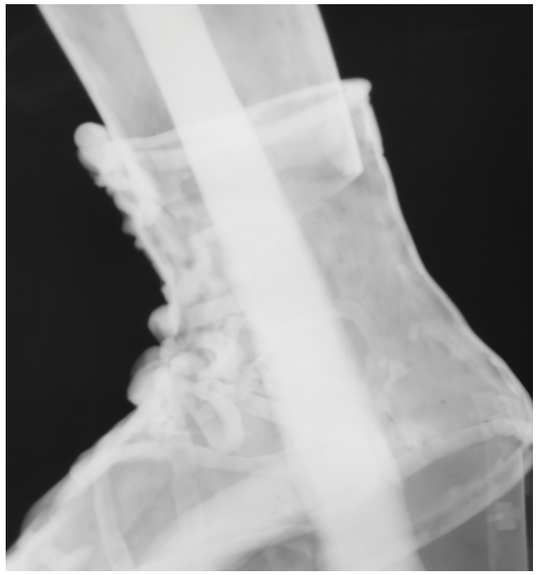
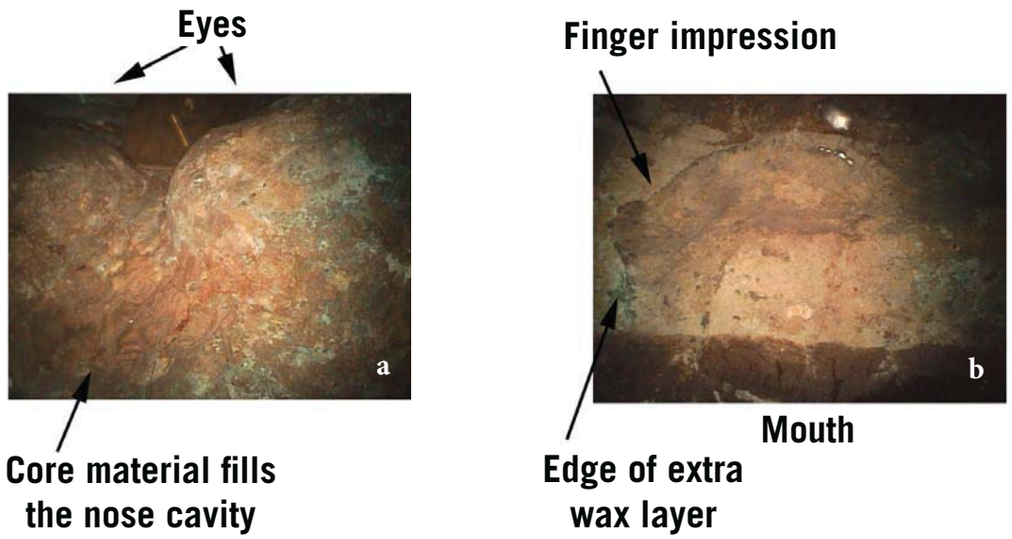


FIGURE 9.26. Radiograph of the left foot. The iron armature is visible as a wide white line in the center of the foot. The bottom of the calf is inserted into the top of the shoe.

FIGURE 9.27. Radiograph of the right foot. The iron armature is visible as a wide white line in the center of the foot. A metal collar (indicated with an arrow) joins the calf to the shoe.

around the different body parts to be cast separately. The piece molds were removed from the original model of the statue and reassembled to create a single, complete mold of each body section. Depending on the accessibility to the interior of each mold, different techniques were used to coat the interior with wax. Sheets of wax were applied to line the interior cavities of molds that had larger openings, such as the torso, or molten wax was poured into molds that had limited access to the interior. In this approach, called slush casting, the mold was turned while the molten wax was poured, so that a uniform coating could be achieved. To produce a hollow bronze casting and maintain the shape of the wax lining, the molds were filled with a clay core. Once the core material had dried, the piece molds were removed to reveal the wax copy of each body section. The craftsman could make further refinements to the wax model by either adding wax or incising additional features. At this stage, core pins, often made of iron, were inserted through the wax into the core material and then the wax model was invested with a heat-resistant clay mixture. This assembly was then heated to high temperatures to dry out the clay core and investment while the wax melted out, leaving a void into which the molten bronze would be poured.

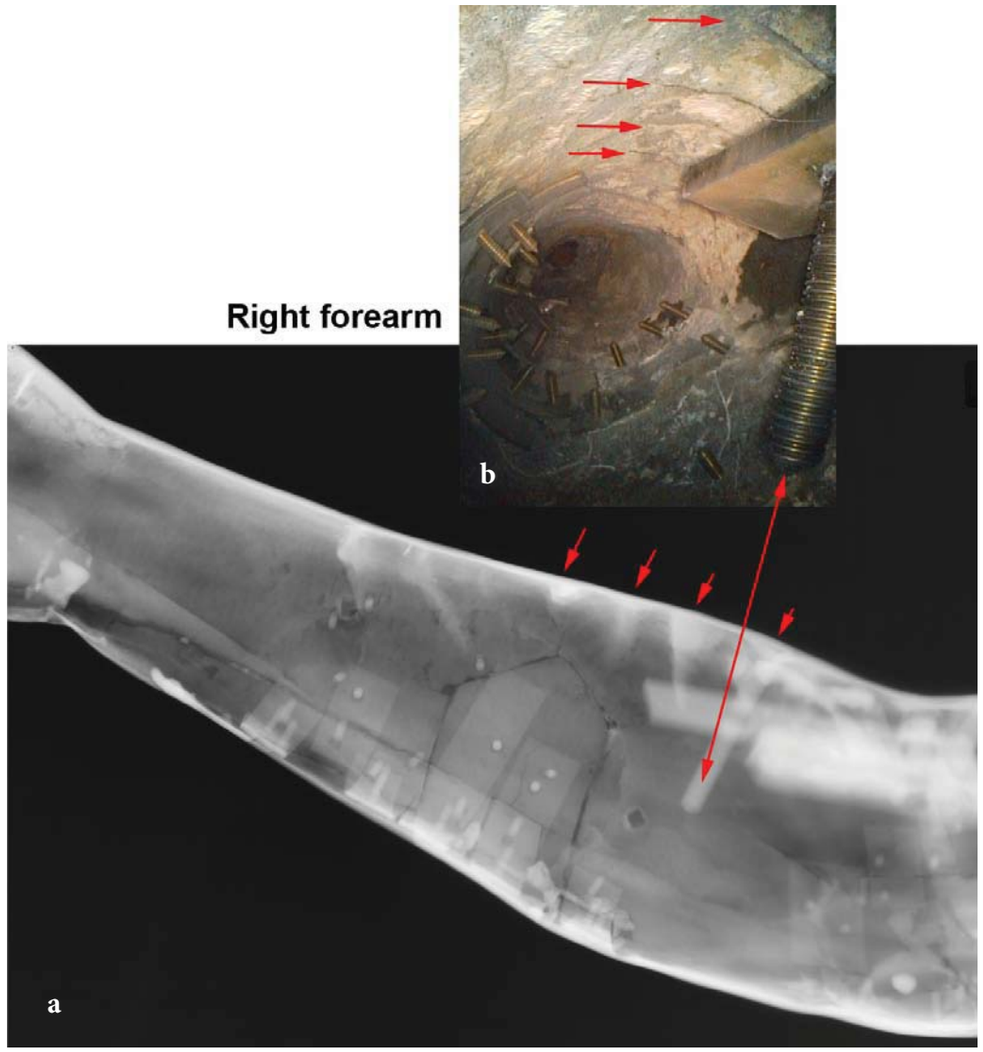
Despite the fragmentary state of the sculpture and the extensive repairs, it is still possible to recognize features that indicate how the wax working models were made. Videoprobe images of the interior face reveal that the backs of the eyes and mouth were reinforced with wax strips applied by hand (figs. 9.28a-b) and also capture an impression of the craftsman's finger (fig. 9.28b). Wax sheets were used to line the mold of the torso. This is apparent in the radiograph, where adjacent wax sheets overlapped, creating a line of increased opacity (see fig. 9.7). Slush casting was used to prepare the waxes for the arms. Drip marks running the length of the right forearm are visible in the radiograph and are indicative of this process (see fig. 9.17). Another feature, found

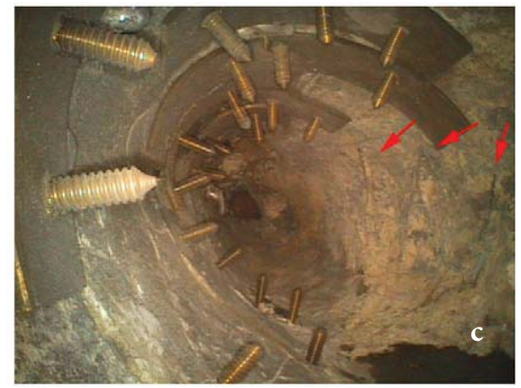


FIGURES 9.28a–b. Videoprobe images of the interior of the face showing the areas where extra wax was added behind the eyes (a) and the mouth (b). The finger impression of the craftsman is preserved in the metal where wax was added to the mouth (b).

in both forearms and evident in the radiographs and videoprobe images, may also be indicative of slush casting. Within each forearm, there is a row of short, parallel ridges perpendicular to the length of the forearm (figs. 9.29a–c).[30] It is likely that several pours of molten wax were needed to evenly coat the entire interior cavity of the molds. Therefore, in addition to the longer drips seen in fig. 9.17, the short ridges could perhaps represent a subsequent pour of wax where the mold was turned in a different direction from the slushing action used in the first coating.

The wax working model of the arms included the palms of the hands, but it may not have included all the fingers (see figs. 9.17, 9.19). This is suggested by features seen in the radiographs.





Interior of left forearm

FIGURES 9.29a–c. Radiograph of right arm, with videoprobe images of interior of both right and left arms. The long red arrow (a) indicates the same rod and strap seen in the radiograph and the videoprobe of the right forearm (b). The short red arrows in both videoprobe images and the radiograph point to the ridges found in the right (b) and left (c) forearms.

In the radiograph of the right hand, there is an elongated solid-metal protrusion in the index finger that extends below the base of the other fingers, along with what appears to be a narrow gap between the index and the middle finger. This may indicate that the index finger was sculpted separately in wax and added to the larger, wax working model of the arm. The core could have been dug out to receive the wax finger or the finger could have been inserted into the wax working model of the arm before the core was filled in. From the evidence of the radiograph of the left hand, it is possible that the gap between the index finger and the middle finger may also suggest that these fingers were sculpted separately and added to the wax working model of the arm. Preparing separate wax fingers would have simplified the process of making sectional molds around the extended fingers on the original sculpture and allowed the craftsmen some flexibility to position the fingers on the wax model.

Elemental analysis of a sample of the core taken from the left hand suggested a combination of approximately equal parts of clay and a calcium-rich component—possibly lime—with a small amount of a siliceous material—probably sand.[31] Such a mixture is plausible for a highly refractory core and is consistent with Roman practices.[32] Thermoluminescence dating analysis was also carried out on a sample of this core material.[33] The results indicate the last date of firing—most probably the moment the bronze was cast—was between 40 and 720 A.D. or about A.D. 380, plus or minus 340 years.[34] The date of the bronze is therefore consistent with manufacture during Trebonianus Gallus's rule between A.D. 251 and 253.[35]

The presence of metal core pins used to support the core in place on the statue of Trebonianus is evident from the many square holes seen in the radiographs. They occur in two basic sizes: five to six millimeters square and three millimeters square. Larger holes, up to twelve millimeters square, were found on the palms (see fig. 9.19) and thighs (fig. 9.30) and could indicate the use of another method of support, such as trunnions or core extensions. Similar large patched holes have been documented on the bronze statue of a victorious youth in the collection of the J. Paul Getty Museum and have also been considered trunnions.[36]

One of the methods used to join the separately cast sections was flow welding, an ancient Roman technique and the technique most likely employed to permanently assemble the statue of Trebonianus Gallus.[37] The repairs to major breaks are located where one might expect to find the original joins on the statue, such as where the upper legs meet the torso. The vestiges of a join in the upper torso may be indicated by a band of slightly denser metal that extends across the chest and continues onto the back (see fig. 9.7).[38] A fragmentary late Roman torso of similar size from a private collection has also been described as being cast in two sections.[39] However, the band of metal in Trebonianus Gallus is somewhat wider and more irregular than expected and could instead be an original cast-in repair.

FIGURE 9.30. Radiograph of left thigh showing the larger square opening that may be a result of a trunnion or core extension. The wide white line is the iron armature, and the brass straps can be seen along the sides of the thigh.

After the bronze was cast, metal patches were inserted to cover the imperfections in the casting and the holes left by the core pins and core extensions. There are numerous patches found on the abdomen (fig. 9.31), whereas the head (fig. 9.32) appears to have only one. This difference may be indicative of the greater care taken to cast the head of an emperor. One patch on the lower abdomen is raised, most likely from the crushing pressure of burial or reshaping of the torso during subsequent repair (fig. 9.33). It is interesting to note that some of the modern restored sections exhibit patches that either cover modern casting flaws or imitate the appearance of the ancient patches.

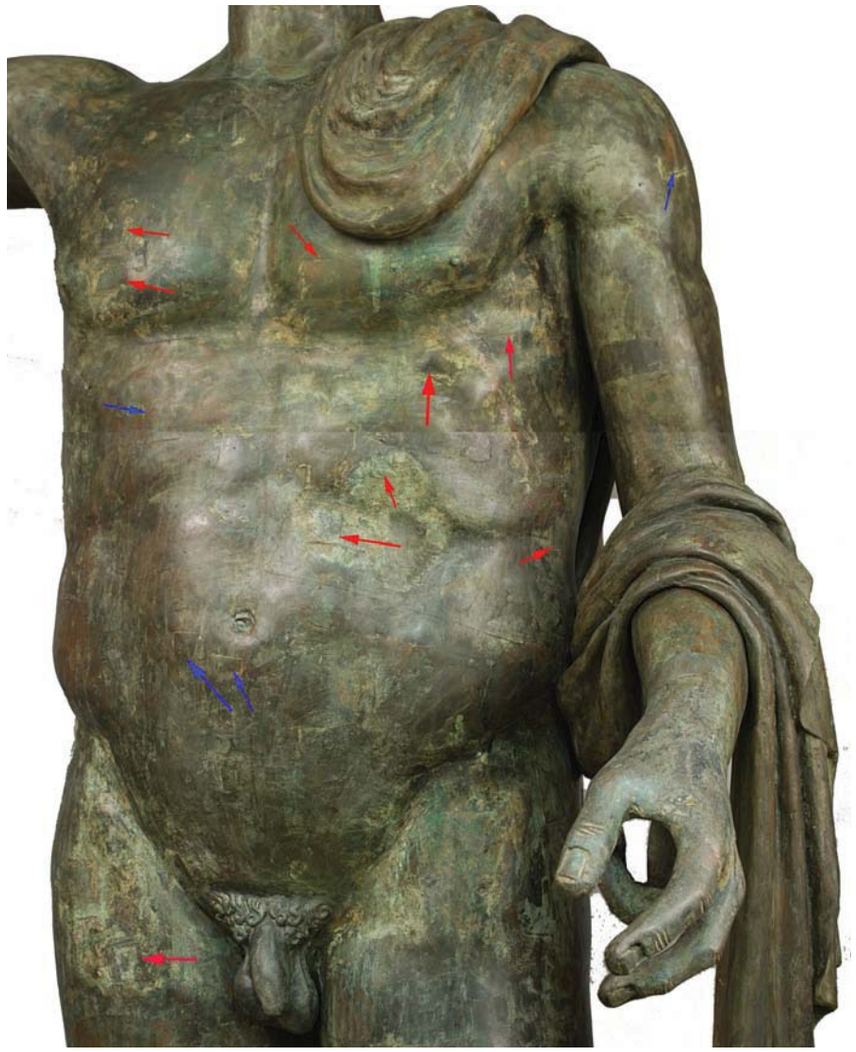


FIGURE 9.31. Photograph of torso showing the numerous patches of different shapes and sizes. The red arrows point to the ancient patches and the blue arrows point to the patches made in the restoration metal.

FIGURE 9.32. Photographic detail of chin showing a patch that was finely done

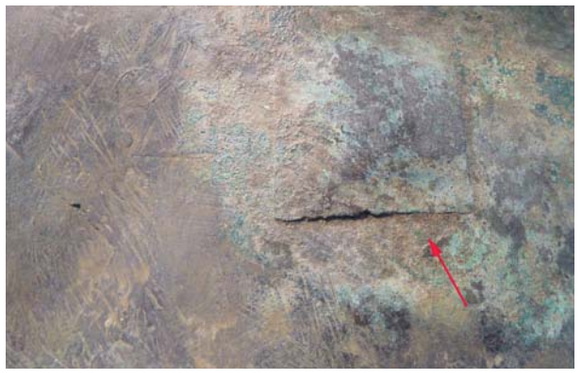


FIGURE 9.33. Photographic detail of raised patch on lower abdomen. In this image one can also see the numerous file marks that were made by the restorers during cleaning on the exterior perimeter of surviving ancient sections like this one.

Iconographic and Stylistic Analysis

When the statue was first published it was identified as a posthumous portrait of Julius Caesar and dated to the Hadrianic period.[40] A large laurel wreath was restored on the head after images of the Divine Julius Caesar (fig. 9.34) and a fig leaf was positioned over the penis. Although the head does exhibit realistic traits, as the veristic portraits of Julius Caesar do, there is not much resemblance. This is clear when one compares the head to portraits of Julius Caesar such as one dredged from the Rhone River in 2007.[41] Much better are comparisons with Roman portraiture of the third century A.D. The head (fig. 9.35) clearly follows the stern realism of portraits of Caracalla, as evinced in a fine example from the Metropolitan's collection (fig. 9.36).[42] The technique in which the hair is rendered, known as *a penna*, was developed by sculptors working in marble and can be seen on earlier portraits of the third century, such as portraits of Severus Alexander (fig. 9.37). There are no large-scale portraits of Trebonianus Gallus that are identified by inscriptions. The identification of the Metropolitan's statue is based on close comparison between the

FIGURE 9.34. Detail drawing of head as restored in nineteenth century with laurel crown. From Bernhard von Köhne, *Mémoires de la Société impériale d'archéologie*, vol. 6, *Musée de sculpture antique de Mr. de Montferrand* (Saint Petersburg, 1852), pl. 2

FIGURE 9.35. Frontal view of head of the Trebonianus Gallus

FIGURE 9.36. Marble portrait of the emperor Caracalla, A.D. 212–217. H. 36.2 cm (14¼ in.). New York, Metropolitan Museum of Art, Samuel D. Lee Fund, 1940 (inv. 40.11.1a)

FIGURE 9.37. Marble portrait bust of the emperor Severus Alexander, ca. A.D. 230–235. Overall 74 × 75 cm (29⅛ × 29½ in.). New York, Metropolitan Museum of Art, Purchase, Lila Acheson Wallace and Philodoroi Gifts, 2011 (inv. 2011.87)

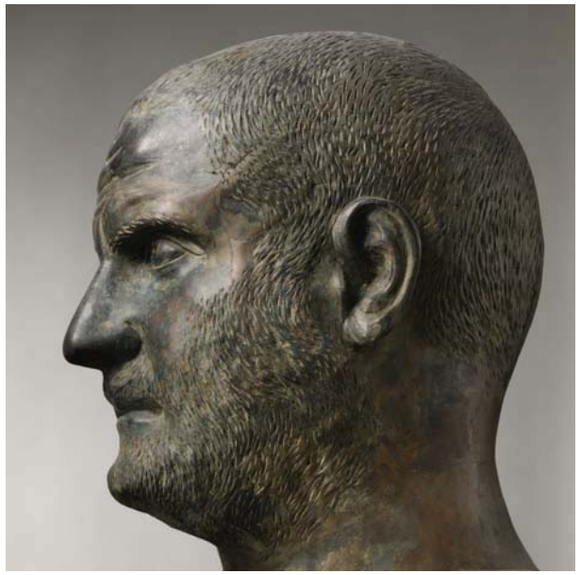


FIGURE 9.38. Profile view of head of the Trebonianus Gallus

FIGURE 9.39. Bronze sestertius of Trebonianus Gallus, A.D. 251–253. H. 2.7 cm (1 1/16 in.). New York, Metropolitan Museum of Art, Gift of William M. Laffan, 1905 (inv. 05.47)

head (fig. 9.38) and coin portraits from the emperor's reign (for example, fig. 9.39). The identification is therefore not absolutely certain but probable.

Indeed, there is not widespread agreement on the identification of large-scale sculptural portraits as Trebonianus Gallus.[43] Drawings of the profiles of six of these portrait heads differ enough for one to question if they represent the same person.[44] Among all the portraits identified as Trebonianus, the Metropolitan's statue seems the best candidate because of the realistic features and the close comparison to the coinage. The sheer monumentality of the statue, which stands nearly eight feet high, and its heroic nudity also strongly suggest that the figure represents a Roman emperor.

The right arm has been damaged and consequently its restoration does not accurately reflect its original position. The right forearm should be slightly higher. The pose with the raised arm has been identified as a gesture of oration, like that of the Arringatore (Florence, Museo Archeologico Nazionale), as if the emperor were addressing his troops.[45] A better comparison, however, is the statue of Alexander with the Lance, by Lysippos, which is echoed in a number of small statuettes among the finest of which is in the Louvre's collection.[46] Heroic nude statues inspired by Alexander's image as the military leader par excellence were popular in Hellenistic and Roman times.

The statue type that appears closest to the Metropolitan's statue is that of Antoninus Pius, represented in a number of marble copies. One is now located in the Palazzo Braschi in Rome, and another is in the Palazzo Massimo, also in Rome.[47] This statue type features the emperor standing in heroic nudity with a short cloak (with a prominent pin, now lacking in the restored drapery of the Trebonianus Gallus) and cradling a short sword, and has been identified as echoing a Classical statue of Diomedes. This statue type was popular in the Roman imperial period and variations of it were used for portraits of important public figures and emperors such as Pompey, Agrippa, Augustus, Trajan, Hadrian, and Antoninus Pius. The association of an emperor with a hero from the mythic foundation of Rome following the fall of Troy would have had potent connotations of leadership and valor. It is clear from the position of the fingers that the Metropolitan's statue held attributes in each hand. The raised right hand likely held a spear, and the left hand most likely cradled a *parazonium*, or short sword. The position of the fingers of the left hand on the Metropolitan's statue is distinctive and very close to that of a third-century A.D. large-scale standing male portrait in the Louvre, which grasps a short sword.[48]

The strangest iconographic feature of the statue is the open-toed half boots, which are elaborately decorated with a mask surmounted by a shell (figs. 9.40–9.42). The right foot appears modern and seems to have been cast from the left, which has an alloy distinct from the other samples taken from cast sections of the statue (see table 9.1). Nonetheless, that the left foot's alloy

FIGURE 9.40. Front detail of left foot of the Trebonianus Gallus

FIGURE 9.41. Profile detail of left foot of the Trebonianus Gallus

FIGURE 9.42. Drawings of feet and shoes from the statue. From Bernhard von Köhne, *Mémoires de la Société impériale d'archéologie*, vol. 6, *Musée de sculpture antique de Mr. de Montferrand* (Saint Petersburg, 1852), pl. 2

is dissimilar is not reason enough to dissociate it from the statue. Different cast sections of large-scale statuary can have differing alloys, and it is necessary to exercise caution when interpreting the meaning of alloy results. Maxwell Anderson suggested that the boots are those of a wrestler, with whom Trebonianus Gallus identified himself, and it is true that the massive chest of the statue recalls a *pankratiast*'s figure.[49] However, a similar type of open-toed half boot appears on a representation of the god Mars on a coin minted during Trebonianus Gallus's reign.[50] If the shoes do belong they may represent an elaborate form of military parade boot, which would have enhanced the image of heroic military leadership that is cultivated in this eclectic statue of the emperor.

A close examination of Montferrand's early drawings (see figs. 9.3, 9.4) in comparison with the current restoration (see figs. 9.1a–c) is instructive. The essence of the representation is similar, but there are some differences aside from the laurel crown and fig leaf. In the drawing, the figure stands on a tilted base and the right hand is raised higher. Judging from the 1853 photograph (see fig. 9.4), the hand was not as high as in the drawing, though it may have been originally. From the back, the figure seems to have greater torsion in the drawing. This is a more naturalistic rendering. In the current restoration, the body is too static for the way that the right arm is raised. It is also too broad. Details of the drapery are different as well.

Conclusion

Prior to this investigation an opaque black coating made it impossible to distinguish between ancient and restored parts by visual examination of the sculpture, and the unusual proportions of the figure led many scholars to question its authenticity or dismiss it as a modern pastiche. The careful technical examination undertaken recently at the Metropolitan Museum made evident that approximately three-quarters of the statue is ancient (see fig. 9.8). Although restorations are present—notably the cape, the left upper arm, and the right foot—the reassembled statue is almost complete, and its stance appears to be close to its original conception. The head, despite its apparent difference in scale, belongs to the body. Although the drapery on the left shoulder and arm is completely restored, the remains of an open cast edge indicate that similar drapery was located there. The left forearm is ancient, and although no longer directly connected to any of the other fragments, appears to be consistent with the rest of the figure. Questions remain about the left foot, because of its small size, though it also appears to be ancient. The statue is, in fact, one of the best preserved large-scale Roman bronze statues that we have from the third century A.D. Its nineteenth-century restoration, as illustrated in drawings, may have given the figure more of the vitality that it surely originally had. While the statue's damaged state and the ungainly restoration of the body make it difficult to appreciate its original appearance, it is possible to identify the type quite securely as a heroic nude emperor, most likely Trebonianus Gallus.

THE BRONZE STATUE OF TREBONIANUS GALLUS IN THE METROPOLITAN MUSEUM OF ART | NOTES

1 Seán Hemingway thanks David Bomford, Karol Wight, David Saunders, and the J. Paul Getty Museum for the invitation to speak at the 2011 symposium, as well as Thomas P. Campbell, director of the Metropolitan Museum, and Carlos A. Picón, curator in charge of the Department of Greek and Roman Art, for their support. His completion of this paper was facilitated by a fellowship at the American Academy in Rome in 2012 as the Metropolitan Museum of Art visiting curator. The study of ancient bronzes is best done through a multidisciplinary approach and this paper is a collaboration by Seán Hemingway, in the Department of Greek and Roman Art, with Sarah McGregor and Dylan Smith, who undertook the conservation and technical analysis in 2002 while working in the Department of Objects Conservation, as well as with Mark Wypyski, in the Department of Scientific Research, who undertook the metal analyses. It was a particular honor for Seán Hemingway to participate in the Getty symposium alongside so many distinguished speakers, especially Carol C. Mattusch and Henry Lie, who first taught him at the Harvard Art Museums how to undertake the technical examination of ancient bronzes.

Sarah McGregor and Dylan Smith thank the following people from the Sherman Fairchild Center for Objects Conservation at the Metropolitan Museum of Art: De Abramitis, conservator of Greek and Roman Art, who gave them this challenging project; Mark Wypyski, in the Department of Scientific Research, who performed the metal analyses; James H. Frantz, former conservator in charge, who was head of the department when this project was carried out and who taught them about metals at the Conservation Center of the Institute of Fine Arts, New York University; Lawrence Becker, current conservator in charge, who supported this publication; and Richard E. Stone, conservator emeritus, who was always on hand to provide insight and share his profound knowledge of ancient bronze casting.

A preliminary account of results from the technical examination appeared in 2003: S. E. McGregor and D. Smith, "Examination of a Third-Century Roman Bronze," *MetObjectives* 5, no. 1 (Fall 2003), pp. 1–4. See also C. A. Picón et al., *Art of the Classical World at the Metropolitan Museum* (New York, 2007), pp. 497–98, no. 471, ill.

2 The first known publications of the statue are from 1852: B. de Köhne, *Mémoires de la Société impériale d'archéologie*, vol. 6, *Musée de sculpture antique de Mr. de Montferrand* (Saint Petersburg, 1852), pp. 2–9, pls. 1, 2; an excerpt from Köhne's book published as *Description des objects les plus remarkables de la collection de M. A. de Montferrand* (Saint Petersburg, 1852); and a brief mention in "1. Wissenschaftliche Vereine," *Archäologische Zeitung* 10 (1852), col. 187. For accounts of the statue's history before its acquisition by the Metropolitan Museum, see also C. M. Fitzgerald, "Bronze Statue of Trebonianus Gallus," *Bulletin of the Metropolitan Museum of Art* 1 (1905), pp. 12–13; F. J. Mather Jr., "A Statue of Trebonianus Gallus," *The Burlington Magazine for Connoisseurs* 8, no. 32 (November 1905), pp. 148–49, 151; and G. M. A. Richter, *The Metropolitan Museum of Art: Greek, Etruscan and Roman Bronzes* (New York, 1915), pp. 154–56, no. 350.

3 Köhne, *Mémoires* (note 2), p. 3, notes that the excavations were carried out with Pope Pius VII's permission. This is a significant detail that lends credence to the account.

4 See E. R. Varner, *Mutilation and Transformation: Damnatio Memoriae and Roman Imperial Portraiture* (Leiden and Boston, 2004), pp. 208–9; I. Mennen, *Power and Status in the Roman Empire, A.D. 193–284* (Leiden and Boston, 2011), esp. chap. 3 on the *equites singulares*.

5 Nineteenth-century paintings, engravings, and daguerreotypes provide a sense of what the villa looked like. It was severely damaged during World War II. For an image of the Demidoff's villa at San Donato, see A. Vezzosi, ed., *Il Giardino d'Europa: Pratolino come modello nella cultura europea* (Florence, 1986), p. 134; pp. 124–57 feature essays on the Demidoffs and Pratolino.

6 Köhne, *Mémoires* (note 2), p. 1.

7 The year of this acquisition is given as 1896 in "23492: Statue eines Mannes mit Portrait des Traianus Decius oder Trebonianus Gallus?," German Archaeological Institute and Archaeological Insitute of the University of Cologne, http://www.arachne.uni-koeln.de. Mather, "Trebonianus Gallus" (note 2), p. 148, suggests it was acquired by the Parisian dealers about 1883.

8 See G. M. A Richter, *The Metropolitan Museum of Art: Roman Portraits* (New York, 1947), no. 109, ill., and "The Department of Greek and Roman Art: Triumphs and Tribulations," *Metropolitan Museum Journal* 3 (1970), pp. 73–95, esp. p. 73, fig. 3.

9 See S. Hemingway, *The Horse and Jockey from Artemision: A Bronze Equestrian Monument of the Hellenistic Period* (Berkeley, 2004), p. 21, figs. 12.1, 12.2.

10 T. Hoving, *False Impressions: The Hunt for Big-Time Art Fakes* (New York, 1997), pp. 328–29. Despite Hoving's misidentification of the figure as Geta, the brother of the emperor Caracalla, it is clear he is referring to the Trebonianus Gallus.

11 G. Lahusen and E. Formigli, *Römische Bildnisse aus Bronze: Kunst und Technik* (Munich, 2001), p. 294, no. 183, figs. 183.1–183.4; C. Hallett, *The Roman Nude: Heroic Portrait Statuary, 200 B.C.–A.D. 300* (Oxford, 2005), p. 322, no. 167.

12 The videoprobe was generously lent to the museum by the company EverestVIT. The model was VIT PLS 500D, with a remotely steerable camera and the ability to capture digital video or still images. Images could be viewed in real time on a small hand-held monitor included with the device, or with an external monitor that allowed several people to observe at once. For further information, see http://www.everestvit.com.

13 At nearly eight feet high, the bronze could not be accommodated in the Sherman Fairchild Center's usual X-ray facility. Gamma radiography using an iridium source contracted from JANX was performed in a subbasement overnight. For additional information, see http://www.janx.net/index.html.

14 SEM-EDS analyses were performed by Mark T. Wypyski, research scientist, Department of Scientific Research, Metropolitan Museum of Art.

15 XRF analysis was performed by Dylan Smith using a Jordan Valley EX-6600 XRF unit.

16 See Erik Risser and David Saunders in this volume.

17 The practice of using metal for restored parts continued well into the twentieth century, as, for example, on the Artemision Jockey restored in 1928. The horse, restored in the early 1970s, uses a similar kind of armature with metal straps and pins but has an epoxy resin instead of metal for the restored areas of the body. See Hemingway, *Horse and Jockey from Artemision* (note 9), esp. pp. 43–49.

18 Fitzgerald, "Trebonianus Gallus" (note 2), pp. 12–13.

19 For an account of André's restoration of the Antikythera Youth, see E. Vicars, "A Rescued Masterpiece: The Finds at Anticythera," *The Pall Mall Magazine* 29 (1903), pp. 551–62, esp. p. 555. See also H. E. Tzalas, "Bronze Statues from the Depths of the Sea," in *Great Moments in Greek Archaeology*, ed. P. Valavanis (Los Angeles, 2007), pp. 342–63, esp. pp. 344–48.

20 See C. Karousos, "Chronikon tis anastaseos tou chalkinou Neou tôn Antikythêrôn," *Archaiologikê Ephêmeris* (1969), pp. 59–79. See also E. S. Myers, "The *Antikythera Youth* in Its Context" (master's thesis, Louisiana State University, 2006), pp. 1–82.

21 A photograph taken in the late 1920s of another famous Greek bronze statue, the God from Artemision, at the time it was being restored in the National Archaeological Museum in Athens, evokes the pioneering nature of these early restorations. See Tzalas, "Bronze Statues" (note 19), p. 350, fig. 18. In the image, a man standing in the center is working a hand drill to make a hole in the ancient bronze to receive a pin like those used to secure metal straps to bind the broken parts of the Trebonianus Gallus together.

22 For the statue of Claudius in the Museo Archeologico Nazionale, Naples, inv. 5393, see G. Lahusen and E. Formigli, *Grossbronzen aus Herculaneum und Pompeji: Statuen und Büsten von Herrschern und Bürgern* (Worms, 2007), pp. 70–72, no. S7, esp. p. 72, fig. 5. For the marble statue of Marcia Furnilla, Roman, Flavian period, A.D. 79–81, in the Ny Carslberg Glyptotek, Copenhagen, see F. Johansen, *Roman Portraits: Catalogue, Ny Carlsberg Glyptotek*, vol. 2 (Copenhagen, 1995), pp. 50–53, no. 14, ill.; S. Hemingway, "Roman Erotic Art," *Sculpture Review Magazine* 53, no. 4 (2004), p. 12, ill.

23 On Cavaceppi's restoration of the Discobolus as Diomedes, see N. H. Ramage, "Restorer and Collector: Notes on Eighteenth Century Recreations of Roman Statues," in *The Ancient Art of Emulation: Studies in Artistic Originality and Tradition from the Present to Classical Antiquity*, ed. E. Gazda (Ann Arbor, 1992), pp. 61–77, esp. p. 66, fig. 3.3. For the marble statue of Tyche-Fortuna restored with the portrait head of a woman, New York, Metropolitan Museum of Art, Fletcher Fund, 1961 (inv. 61.82.1, .2), see J. Parker, "Patrons of Robert Adam at the Metropolitan Museum," *Metropolitan Museum Journal* 1 (1968), pp. 109–24, esp. pp. 123–24, fig. 17.

24 Los Angeles, J. Paul Getty Museum, inv. 71.AB.458. See C. C. Mattusch, *The Fire of Hephaistos: Large Classical Bronzes from North American Collections* (Cambridge, Mass., 1996), p. 311.

25 It can be compared, for example, to the Apollo Saettante from Pompeii, which preserves part of the cast edge of the back left open beneath the drapery (see "Apollo Saettante from Pompeii Interactive," J. Paul Getty Museum, http://www.getty.edu/art/exhibitions/apollo_pompeii/interactive/index.html).

26 See Risser and Saunders in this volume.

27 A similar sleeve was used in the restoration of one leg of the Apollo Saettante (see Risser and Saunders in this volume). This sleeve does not belong to the early-nineteenth-century restoration; it is a later, nineteenth-century repair. We are grateful to David Saunders for this information.

28 On alloys, see D. Haynes, *The Technique of Greek Bronze Statuary* (Mainz, 1992), p. 88; Lahusen and Formigli, *Römische Bildnisse aus Bronze* (note 11), pp. 471–78; C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005), pp. 136–39, table 3.3a.

29 For a description of the indirect lost-wax method, see Mattusch, *Fire of Hephaistos* (note 24), pp. 15–43; S. Hemingway, *How Bronze Statues Were Made in Classical Antiquity* (Cambridge, Mass., 1996), pp. 1–8.

30 A similar-looking feature appears on the bronze herm of Dionysos in the J. Paul Getty Museum, inv. 79.AB.138. See Mattusch, *Fire of Hephaistos* (note 24), pp. 186–89, esp. fig. 3e. Also see D. A. Scott and J. Podany, "Ancient Copper Alloys: Some Metallurgical and Technological Studies of Greek and Roman Bronzes," in *Small Bronze Sculpture from the Ancient World* (Malibu, 1990), pp. 31–59, esp. fig. 13b. The ridges seen in the videoprobe and radiographs of the forearms of the Trebonianus Gallus do not have corresponding chaplet holes and therefore are not flash lines created from the cracking of the core when a chaplet was hammered. This explanation is given by Scott and Podany for the lines seen in the Getty herm (p. 53).

31 Analysis by Mark Wypyski, using SEM-EDS (CaO: 35.89, SiO_2: 27.52, Al_2O_3: 7.93, FeO: 4.58, SO_3: 8.10, NaO: 0.83, MgO: 2.52, TiO_2: 0.84). XRF analysis carried out on a sample of the core also indicated the presence of phosphorus.

32 See D. A. Scott, *Copper and Bronze in Art: Corrosion, Colorants, Conservation* (Los Angeles, 2002), p. 396, n. 18.

33 Daybreak Archaeometric Laboratory Services. For further information, see http://www.daybreaknuclear.us.

34 This result is likely to be slightly later than the actual firing date as a result of gamma radiography exposure of the core inside the arm prior to sampling. Victor Bortolot of Daybreak (see note 33 above) indicated that five years per exposure was a general rule of thumb. There was only one direct exposure of this area during radiography, but numerous exposures were taken in the near vicinity, and the higher energy of gamma radiography should also be taken into account.

35 It should be noted that this result confirms the ancient date of the left arm only, because of the absence of a direct physical connection between this arm and the body. However, it is reasonable to accept this date for the sculpture as a whole, based on strong similarities in material, manufacture, condition, and style between the other ancient fragments and the left arm.

36 Los Angeles, J. Paul Getty Museum, inv. 77.AB.30. See Haynes, *Technique of Greek Bronze Statuary* (note 28), p. 70. See also C. C. Mattusch, *The Victorious Youth* (Los Angeles, 1997), pp. 73–74.

37 On flow welds, see S. Hemingway, "Bronze Sculpture," in *Making Classical Art: Process and Practice*, ed. R. Ling (Stroud, Gloucestershire, 2000), pp. 37–46, esp. p. 44.

38 A bronze statue of Lucius Verus in the Shelby White and Leon Levy Collection, inv. 267, exhibits a similar midtorso flow-weld join. See Mattusch, *Fire of Hephaistos* (note 24), p. 336, figs. 50l–m.

39 Mattusch, *Fire of Hephaistos* (note 24), p. 349.

40 For the earliest references to the statue, see note 2 above. See also J. J. Bernoulli, *Römische Ikonographie* (Stuttgart, 1882), p. 165, no. 60; S. Reinach, *Répertoire de la statuaire grecque et romaine*, vol. 3 (Paris, 1897), p. 571, fig. 3; and F. S. Scott, *Portraitures of Julius Caesar* (New York, 1903), pp. 176–77. Scott relies on earlier scholars' dating because he was unable to see the piece himself.

41 See L. Long and P. Picard, eds., *César: Le Rhône pour mémoire; Vingt ans de fouilles dans le fleuve à Arles* (Arles, 2009), pp. 58–77, ill.

42 See S. Wood, *Roman Portrait Sculpture, 217–260 A.D.: The Transformation of an Artistic Tradition* (Leiden, 1986), pp. 43–45, 91, 133, figs. 11a–b; A. M. McCann, "Beyond the Classical in Third Century Portraiture," *Aufstieg und Niedergang der römischen Welt* 2, 12.2 (1981), pp. 623–44, esp. pp. 630–32, pls. 5, 6.

43 Scholars who do not identify the statue as Trebonianus Gallus include M. Bergmann, *Studien zum römisch Porträt des 3. Jahrhundert n. Chr.* (Bonn, 1977), p. 45, n. 142; M. Wegner, *Das römische Herrscherbild: Gordianus III. bis Carinus* (Berlin, 1979), pp. 89–90.

44 See Wegner, *Römische Herrscherbild* (note 43), pp. 83–91, esp. the drawings of portrait profiles on p. 86.

45 See, for example, McCann, "Third Century Portraiture" (note 42), p. 632.

46 Paris, Musée du Louvre, Br 370. See D. E. E. Kleiner, *Roman Sculpture* (New Haven, 1992), pp. 371–72, fig. 336.

47 For the statue of Antoninus Pius in the Palazzo Braschi and its relation to other statuary of similar type, including the bronze statue discussed in the present paper, see M. Papini, *Palazzo Braschi: La collezione di sculture antiche* (Rome, 2000), pp. 131–57, figs. 73–76, esp. p. 148. For the statue of Antoninus Pius in the Palazzo Massimo, inv. 135845, and discussion of the use of the Diomedes type in imperial statuary, see A. La Regina, *Museo Nazionale Romano Palazzo Massimo alle Terme* (Milan, 1998), p. 98, ill.

48 Paris, Musée du Louvre, inv. Ma 1059. See Hallett, *Roman Nude* (note 11), pp. 192, 326, 372, no. B230.

49 M. Anderson, cited in J. R. Mertens, *The Metropolitan Museum of Art: Greece and Rome* (New York, 1987), pp. 152–53.

50 For an image of this bronze sestertius from a private New York collection, see between no. 114c and no. 115a in "Trebonianus Gallus Bronze Coins," Richard Beale, http:// www.sonic.net/~marius1/mysite/Trebonianus.htm.

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Fig. 9.9: Image courtesy of Dylan Smith
Fig. 9.21: J. Paul Getty Museum

10 | Methods and Materials Used for Patination at the Fonderia Chiurazzi

Luisa Fucito

FIGURE 10.1. The Fonderia Chiurazzi at the Albergo dei Poveri, Naples, early 1900s

FIGURE 10.2. Molds stored at the Fonderia Chiurazzi

The Fonderia Chiurazzi was established by Gennaro Chiurazzi (1840–1906), who first opened a small foundry in Naples in 1870.[1] Rapidly successful, he created a workshop in the city's Albergo dei Poveri (fig. 10.1) and assembled a small army of *formatori* who produced casts of numerous statues. Over the years the foundry had the opportunity to take molds in the collections of the Museo Archeologico Nazionale in Naples; the Capitoline Museums, the Vatican, and the Borghese Gallery in Rome; and the Palazzo Pitti and the Uffizi Gallery in Florence. The result is more than fifteen hundred plaster piece molds (fig. 10.2), which represent the legacy of a century of exclusive work by the company, and one that cannot be re-created today. Examples of Chiurazzi bronzes are to be found throughout the world, and include the series of replicas of statues from the Villa dei Papiri that were commissioned for the Getty Villa in Malibu in the early 1970s (fig. 10.3).

Together with its extraordinary collection of molds, a key element in the foundry's success was its use of traditional techniques—above all, its employment of the lost-wax technique (rather than sand casting, which was more widespread at the time). This guaranteed that the replicas would be of very high fidelity. Sale catalogues published by the foundry during the twentieth century show that, besides marketing its products in different sizes, the company made them available with different patinas: Pompeii (green), Herculaneum (dark), and Renaissance (shiny bronze).[2] Patination is a highly specialized craft, and one that owes as much to tradition and training as it does to empirical knowledge. This essay offers a brief overview of the techniques and materials that have been used by the Fonderia Chiurazzi, and in doing so provides a practical analysis of the patinator's art in nineteenth- and twentieth-century Naples.

FIGURE 10.3. Chiurazzi replicas on view in the inner peristyle of the Getty Villa, Malibu

Natural and Artificial Patination

Patina on a copper alloy, also known as corrosion or mineralization, occurs naturally and automatically. Outdoors, bronzes commonly develop a dark greenish coloration (patina), which is chemically a basic copper carbonate formed from the reaction of the copper in the metal alloy with atmospheric carbon dioxide and ambient or atmospheric moisture. This common form of

corrosion is soluble (which is why marble bases on which bronze statues stand are often stained a bluish green). Excavated bronzes, on the other hand, typically display a patina of copper salts, both soluble and insoluble, that were formed through chemical reactions during centuries of burial. In volcanic soils, such deposits are usually a uniform matte green color. In instances of prolonged burial in acidic soils (or exposure to air pollution), bronze surfaces will react to form copper sulfates, copper nitrates, and copper chlorides. These are highly soluble and offer little protection to the metal surface, resulting in continuous corrosion that can be highly destructive.

Patinas—or the appearance of a patina—can also be brought about artificially. At its simplest, a false patina can be obtained by applying oils, glazes, or paints to the bronze. These do not provoke any chemical reactions, and simply mimic the look of a patinated surface. However, their artificiality is often easily recognizable and the color not very durable. Much more effective is chemical patination. This is the provocation, acceleration, and control of the natural process of corrosion using chemicals to produce the desired colors and textures—in other words, artificial aging. Such chemical patinas are typically obtained with sulfides, nitrates, oxides, acetates, and chlorides. These react with the bronze surface to produce colors ranging from a deep black through a warm reddish brown, to various shades of green and other unusual hues, and can be opaque, semiopaque, or transparent.

Preliminary Surface Treatment

Even after a bronze statue has been cast, assembled, and cleaned, and any cold-working refinements have been made, the statue still has a rather heterogeneous appearance, since some areas remain covered by a dark layer resultant from the casting, whereas at other areas the bare metal is exposed.[3] The statue is therefore put into a pickling bath of 10 percent nitric or sulfuric acid to eliminate the oxidized surface (that is, the dark layer that remains on the surface).[4] Once the bronze has been allowed to dry, it has a brownish color and can be rinsed with water.[5] It is rarely left in this state, however, as the uniform color tends to flatten the volume of the sculpture. It is thus passed to the specialist who will apply the patina.

Producing the Patinas

Chemical patinas can be classed as either "'hot" or "cold." For cold patination (*patinatura a freddo*), acids or other chemical solutions are applied directly by brushing or spraying and allowed sufficient time to react with the metal surface. For hot patination (*patinatura a caldo*), a heat source in the form of an open flame or torch is used (fig. 10.4) and the bronze is brushed with liquid salt solutions consisting of nitrates, acetates, or sulfides.

FIGURE 10.4. Hot patination using a blow torch

FIGURE 10.5. Pompeii patina

FIGURE 10.6. Pompeii patina (detail of the head)

Patinatura a freddo

Depending on the particular color intensity and texture that is sought, a variety of substances can be used to produce an array of greens. One simple technique is to brush the bronze with acetic acid and ammonium salts. This is done at daily intervals, and the metal is rubbed and rinsed until the desired hue is obtained. Another method is to apply a cold mixture of salt water, fresh water, ammonium salts, nitric acid, and a small piece of copper (which is used to convert the nitric acid to cupric nitrate). The resultant surface can then be used as a base on which to produce a Pompeii patina (figs. 10.5, 10.6). This is obtained by adding powdered ammonium salts to create the grainy effect that is traditionally associated with an excavated ancient statue. The bronze is then exposed to inclement weather and the patina fixed with shellac or a similar lacquer, mixed with colophony and pine resin in alcohol. This patina will age naturally over time, but the process can be accelerated by applying ash.

A third method requires cleaning the surface of the bronze with sulfuric acid, then applying a layer of the green patina and letting it sit for twenty-four to forty-eight hours. A second coat of green is then applied and allowed to dry. It is subsequently fixed with shellac or lacquer and alcohol. After twenty-four hours, the surface is sprinkled with beeswax diluted in benzine. After another twenty-four hours, a powdery mixture of talc, canary yellow, and Prussian blue is applied with a dry brush and then the surface is polished.

Another method to obtain greens is to use potassium sulfide (liver of sulfur) diluted with water,[6] then ammonium salts or ammonium chloride mixed with copper sulfate. By itself, diluted potassium sulfide will produce a natural light bronze color, and a range of hues can be obtained according to how long the solution has been applied (multiple applications are also possible). In its pure state, potassium sulfide will produce black (fig. 10.7), which can also be obtained with arsenic-based solutions. For reds, iron chlorides can be used, as can ferric sulfate or ferric nitrate. The addition of mercury chromium produces a bright red.

Patinatura a caldo

Given that time and labor are often key factors in the patination process, there is today a preference for hot patinas because of the rapidity of their action and their greater durability. Green can be obtained by applying diluted cupric nitrate a little at a time to a bronze surface that is heated with an open flame (fig. 10.8). The temperature of the metal and the number of applications adjust the color of the patina, as does varying the ratio of acid to water, with stronger concentrations producing more vivid results. Alternatively, the surface can initially be darkened with silver nitrate or potassium sulfide, and after drying with a flame, copper acetate is applied.

FIGURE 10.7. Herculaneum patina

FIGURE 10.8. Green patina

FIGURE 10.9. Dark brown patina

To get a brown hue, the bronze is repeatedly coated with a liquid solution of ammonium sulfide and subjected to occasional gentle heating in association with the application of red ocher, chrome yellow, or carbon black pigments according to the desired tint. For a dark brown patina (fig. 10.9), sometimes known as a Florentine patina (*bronzo fiorentino*), one can use either pyrogallic acid (pyrogallol) or sulfuric acid to which iron oxide has been added. Gentle heating is employed together with yellow ocher and then the entire surface is coated with wax and buffed to the desired sheen. For a shiny Renaissance patina (fig. 10.10), ferric nitrate (obtained by dissolving small pieces of iron such as nails in nitric acid) is diluted with alcohol and water, and the solution brushed onto a heated surface, which is then polished with wax and alcohol.

Other Methods

Today the colors achieved through these various patination processes are sealed with shellac dissolved in alcohol. They can be further adjusted and made more intense with alcohol-based aniline dyes.[7] These are concentrated powdered colorants that are often used to color stains, oils, waxes, paints, and resins. They are easy to use and can be mixed together to produce an infinite variety of hues. If this extra layer is applied, it requires sealing with microcrystalline wax.

Two other methods of chemical patination are worth noting. One is done *a fumo* (by "smoking")—that is, by placing the metal in a reagent-rich environment. This gives rise to a color that is shiny and delicate on account of the very fine corrosion crystals that are formed on the surface of the metal. The object to be patinated is placed in a sealed container together with vessels holding the necessary chemical solutions. To produce a greenish blue, for example, the bronze is accompanied by a dish containing acetic acid, a second containing ammonia, and a saucer of water.[8] The process takes ten to thirty days. An ancient-looking green color is obtained in a similar way with a solution of one part nitric acid and one part water in the first dish, distilled water in the other, and four tablespoons of marble chips in the saucer.

Another type of chemical patina is that achieved by burying the object in the ground, in sand or in sawdust. The burial material is moistened frequently with uric acid or a solution of ammonia. This takes around twenty days. Such a patina is not very robust at first, but becomes so with the passing of time.

FIGURE 10.10. Renaissance patina

Protection

However it is produced, a chemically patinated surface that is placed outdoors will be affected by humidity and chemical substances present in the air, with the result that the color will vary according to where it is exposed.[9] It is therefore best to treat the patinated bronze with regular applications of a protective coating.

Before applying this, it is vital to eliminate any residual dampness, which can reside in the recesses or folds of a patinated surface, giving rise to the formation of chlorides or so-called bronze disease (identifiable by a distinctive light green powder). Dampness also favors the formation of sulfates, which contain copper compounds that corrode the surface—a situation that worsens further when the chemical components of the patina also react. The patinated surface must therefore be thoroughly dried by leaving it in a dry environment (for a day) or in an oven at a low temperature (for one to three hours).

Once the surface of the bronze has been lightly heated, a beeswax paste is applied, but it is necessary to take into account the various types of patina. The wax applied on a patina *a caldo* can be vigorously rubbed when cold and dry, in order to render the surface shinier. But a patina *a freddo* is delicate, and the wax ought to be applied lightly. A patina *a fumo* is even more vulnerable, and ought to be protected by shellac, lacquers, varnishes, or some other form of coating applied after lightly heating the surface. Today many waxes colored with aniline dyes are also used at this stage, in order to increase further the color intensity of the patina (or to create a false patina, though this is not particularly resilient or durable). Sprayable shellacs, varnishes, and other types of coatings have the tendency to render the patinated surfaces very shiny, whereas the waxes dampen such an effect.

METHODS AND MATERIALS USED FOR PATINATION AT THE FONDERIA CHIURAZZI | NOTES

1 For a full history of the Fonderia Chiurazzi, see L. Fucito, *Fonderia artistica Chiurazzi: La forma dell'arte* (Naples, 2001); C. C. Mattusch, *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, with H. Lie (Los Angeles, 2005), pp. 342–51.

2 See, for example, the catalogue *Chiurazzi: Fonderie–Ceramica–Marmeria* (Naples, 1929).

3 The bronze can be cleaned further with a file and rasps and then polished with cuttlefish bone or fine-grained stone such as pumice or emery. Until the nineteenth century, bronzes were cleaned in this fashion even when they were to be patinated.

4 Today, given widespread environmental awareness and greater responsibility regarding the use of toxic chemicals, many substitute citric acid for these acids.

5 To achieve a lustrous surface, a solution of nitric and sulfuric acids and water is used. After it has been brought to a boil, the bronze is immersed for a few seconds, or brushed with the solution and then rinsed. For a sateen surface, the same process is performed with diluted hydrofluoric acid.

6 To prepare a solution for coating metals, fifty grams of potassium sulfide are dissolved in one liter of deionized water (preferably hot), and one hundred milliliters of concentrated ammonia added. Once the solution has fully dissolved, it may be applied directly to the metal by brush, spray, or swab. It is then necessary to wait for the solution to react (on average, forty-eight hours). Once the patination process has been completed, it is advisable to protect the surface from successive oxidations with a layer of microcrystalline wax or with a coating or varnish such as Metacril that is specifically formulated for this purpose and contains oxidation and corrosion inhibitors such as benzotriazole.

7 Different-colored anilines are easily mixed to achieve a specific color and can be mixed into oils, waxes, paints, and resins. Some of the more common colors produced with aniline dyes are light reddish mahogany, dark brown mahogany, oak, light walnut, dark walnut, and ebony.

8 The object needs to be moistened with water before being placed in the container.

9 The color will be green near the sea, brown in the countryside, and brown, green, or black in the city.

ILLUSTRATION CREDITS
Fig. 10.1: Photo: Fonderia Chiurazzi
Fig. 10.2: Photo D. Saunders
Fig. 10.3: Photo: E. Rosenberry, J. Paul Getty Museum
Figs. 10.4–10.10: Photo: L. Fucito, Fonderia Chiurazzi

About the Authors

Nathalie Balcar is a conservation scientist working with conservators to further knowledge of cultural heritage through stratigraphic studies and the identification of pigments. She specializes in the characterization of organic materials by various chromatographic techniques. In 1999 she joined the Centre de Recherche et de Restauration des Musées de France, and since 2008 she has focused on the analyses of plastics and other modern materials.

Sophie Descamps-Lequime is curator in the Department of Greek, Etruscan, and Roman Antiquities at the Musée du Louvre and has been in charge of the collection of Greek and Roman bronzes since 1983. In the context of the opening of Le Grand Louvre, she was responsible for the complete reorganization of the Salle des Bronzes. Descamps-Lequime was one of the curators of *Les Bronzes de la Couronne* (Musée du Louvre, 1999), *The Eye of Josephine: The Antiquities Collection of the Empress in the Musée du Louvre* (High Museum of Art, 2008), and *Au royaume d'Alexandre le Grand—La Macédoine antique* (Musée du Louvre, October 2011). She also edited the proceedings of the symposium *Peinture et couleur dans le monde grec antique* (Paris, 2007). In connection with the Croatian Apoxyomenos (displayed at the Louvre from November 2012 to February 2013), she co-organized a one-day workshop on the topic of dating Classical and Hellenistic bronzes.

Luisa Fucito studied modern literature at the Università degli Studi di Napoli Federico II and history of art at the Università degli Studi Suor Orsola Benincasa in Naples. She is a historical and technical consultant to a number of important foundries in Naples, notably the Fonderia Chiurazzi. Fucito is also curator of this foundry's photographic archive and collection of more than 1,500 plaster casts. Her publications include a valuable study of the history and production practices of this foundry, *La Fonderia Artistica Chiurazzi: La forma dell'arte* (Naples, 2009). Fucito has organized exhibitions at the Galleria d'Arte Contemporanea Ediarte and the Palazzo Reale in Naples.

Seán Hemingway received his doctor of philosophy from Bryn Mawr College and studied at the American School of Classical Studies in Athens as a Fulbright Scholar. A specialist in Greek and Roman bronzes, he is a curator in the Department of Greek and Roman Art at The Metropolitan Museum of Art, New York. A seasoned archaeologist, Hemingway has excavated prehistoric, classical, and Roman sites in Greece and Mallorca. He was a visiting curator at the American Academy in Rome in 2003 and again in 2012 and is one of the curators responsible for the reinstallation of the new Greek and Roman galleries in The Metropolitan Museum of Art.

Sarah McGregor received her master of fine arts and diploma in art conservation from the Conservation Center of the Institute of Fine Arts at New York. She is associate conservator in The Sherman Fairchild Center for Objects Conservation at The Metropolitan Museum of Art, where she has focused on conservation of a broad range of objects for major reinstallations of the Greek and Roman galleries and the recently reopened Islamic galleries. She is currently conserving silver objects from the Henry R. Luce Center for the Study of American Art in the museum's American Wing.

Carol C. Mattusch is Mathy Professor of Art History in the Department of History and Art History at George Mason University. A graduate of Bryn Mawr College, she received her doctor of philosophy in art history from the University of North Carolina at Chapel Hill. Mattusch was guest curator of *Pompeii and the Roman Villa: Art and Culture around the Bay of Naples* (National Gallery of Art, 2008) and principal author and editor of the catalogue. She also curated *The Fire of Hephaistos: Large Classical Bronzes from North American Collections* (Harvard Art Museums, 1996), for which she and Henry Lie wrote the catalogue. Mattusch's other publications include *The Villa dei Papiri at Herculaneum: Life and Afterlife of a Sculpture Collection*, also with Henry Lie (Los Angeles, 2005); *The Victorious Youth* (Los Angeles, 1997); *J.J. Winckelmann, Letter and Report on the Discoveries at Herculaneum* (Los Angeles, 2011). Most recently she edited *Rediscovering the Ancient World on the Bay of Naples, 1710–1890* (Washington, D.C., 2013).

Luigia Melillo is an archaeologist and coordinating director at the Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei. She is in charge of the conservation and restoration laboratory of the Museo Archeologico Nazionale di Napoli and has played a critical role in developing the Museo Archeologico's collaborations with the J. Paul Getty Museum. Melillo teaches restoration methodology and techniques at the Università degli Studi Suor Orsola Benincasa in Naples. She has excavated many ancient sites throughout Campania and published numerous articles on archeology and restoration, including studies on the Alexander Mosaic from the *Casa*

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Andrea Milanese is an art historian in the Soprintendenza per i Beni Archeologici di Napoli e Pompei and is responsible for the historical archives of the Museo Archeologico Nazionale di Napoli. His research interests cover the history of museums and collecting in the eighteenth and nineteenth centuries and the history of restoration. In addition to publishing *Album Museo: Immagini fotografiche ottocentesche del Museo Nazionale di Napoli* (Naples, 2009), a collection of photographs of the museum taken in the nineteenth century, Milanese has participated in the organization of several international exhibitions and conferences and published numerous essays and articles. He taught museology as a member of the faculty of architecture at the University of Naples, spent three years in Paris as research associate at the Centre National de la Recherche Scientifique and the Institut National d'Histoire de l'Art, and was a visiting professor at the École des hautes études en sciences sociales.

Benoit Mille has been an archaeometallurgist in the Ministry of Culture at the Centre de Recherche et de Restauration des Musées de France since 1993. His research focuses on copper-based alloys and seeks to determine elemental compositions and metalworking techniques. His research has been applied to the study of large bronze statues from Classical Antiquity (Egyptian, South-Arabian, Greek and Roman civilizations); the phenomenon of metal hoards during the European Bronze Age; and the conditions for the emergence of metallurgy (France, Pakistan, Chile).

Uwe Peltz began working as a restorer at the Berlin Postmuseum (today the Museum für Kommunikation) in 1986, after training as a toolmaker. He enrolled for further study as a conservator of metal objects in 1989, and in 1991 joined the staff of the Antikensammlung in Berlin. He successfully completed his studies in 1993 and is currently examining 300 years of restoration techniques in the collections in the Berlin Antikensammlung for his dissertation at the Staatliche Akademie der Bildenden Künste in Stuttgart. In addition to the conservation of metal finds, Peltz's research interests lie in the study of production technologies, such as those of metal vessels and large bronze sculptures, and restoration histories of ancient bronzes. He has published widely on these themes, and has curated several exhibitions and conferences, including *kulturGUTerhalten – Restaurierung archäologischer Schätze an den Staatlichen Museen zu Berlin* (2009). For

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Erik Risser holds a bachelor of arts in classical archaeology from the University of Evansville and a master of science in conservation for archaeology and museums from the Institute of Archaeology, University College, London. As associate conservator of antiquities at the J. Paul Getty Museum, he has been involved in the treatment of numerous objects in the museum's collection and is currently working on the study and treatment of the bronze statue of Tiberius from Herculaneum for the exhibition *Tiberius: Portrait of an Emperor* at the Getty Villa. Risser was also the conservator of the bronze statue of Apollo Saettante and co-curated the associated exhibition, *Apollo from Pompeii: Investigating an Ancient Bronze* (J. Paul Getty Museum, 2011). He collaborated on several initiatives with other museums, which resulted in the exhibitions *Reconstructing Identity: A Statue of a God from Dresden* (J. Paul Getty Museum, 2009–2010) and *The Hope Hygieia: Restoring a Statue's History* (J. Paul Getty Museum, 2008). Risser previously worked for the British Museum and the Institute of Archaeology on the 'Ain Ghazal Statue Project and is currently a conservator at the excavations of Sagalassos, Turkey.

Dominique Robcis is head of the archaeological department at the Centre de Recherche et de Restauration des Musées de France and has been responsible for the conservation of ancient metal artifacts since 2002. He has a *maîtrise* in medieval history and another in the conservation of metals; his research interests focus on technological studies of archaeological artifacts. More specifically, Robcis studies patinas and gilding, and directs several projects in collaboration with the Musée du Louvre. He also teaches at both the École du Louvre and the Institut National du Patrimoine in Paris.

David Saunders is assistant curator in the Department of Antiquities at the J. Paul Getty Museum. He obtained his doctorate in classical archaeology from Lincoln College, University of Oxford, with a thesis on dead and dying figures in Athenian vase painting. He was curator for the Getty Villa's installations of *The Golden Graves of Ancient Vani* (2009) and *Aphrodite and the Gods of Love* (2012), and co-curator of *Apollo from Pompeii: Investigating an Ancient Bronze (2011)*. Saunders is currently developing exhibitions on the Cyrus Cylinder and Ancient Persia, the bronze portrait of Tiberius from Herculaneum, and a group of large South Italian vases that were restored in the nineteenth century.

Salvatore Siano graduated with a degree in physics from the University of Florence. Since 1994 he has been a researcher at the Istituto di Fisica Applicata Nello Carrara of the Italian National Research Council in Florence. He has participated in and has been responsible for various national and international research projects dedicated to the study and conservation of cultural heritage. He has developed physical techniques for material characterization and conservation and actively pursues archaeometallurgical research. Among his most relevant contributions to the field are studies of unique masterpieces such as Andrea del Verrocchio's *David*, Donatello's *Attis* and *David*, Lorenzo Ghiberti's *Porta del Paradiso*, Vincenzo Danti's *Decollazione del Battista*, Giovan Francesco Rustici's *Predica del Battista*, the *Arringatore*, the *Minerva* from Arezzo, and the *Chimaera* of Arezzo. The results of his research have been reported in many publications, including scientific journals, books, and proceedings of international conferences.

Dylan Smith received his master of fine arts and diploma in art conservation from the Conservation Center of the Institute of Fine Arts at New York University. From 1999 to 2004, he served as an objects conservator for the reinstallation of the Greek and Roman galleries at The Metropolitan Museum of Art. He also served for many years as a supervisory conservator at the Harvard-Cornell Archaeological Excavations at Sardis, Turkey. Since 2005, Smith has focused on the technical study of Renaissance bronzes as the Robert H. Smith Research Conservator at the National Gallery of Art in Washington, D.C.