



Objects Specialty Group

Article: The Comprehensive Retreatment of a Renaissance Terracotta Altarpiece by Benedetto Buglioni

Author: Rachel C. Sabino

Source: *Objects Specialty Group Postprints, Volume Twenty-Four, 2017*

Pages: 26–46

Editors: Emily Hamilton and Kari Dodson, with Tony Sigel Program Chair

ISSN (print version) 2169-379X

ISSN (online version) 2169-1290

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727 15th Street NW, Suite 500, Washington, DC 20005 (202) 452-9545

www.culturalheritage.org

Objects Specialty Group Postprints is published annually by the Objects Specialty Group (OSG) of the American Institute for Conservation (AIC). It is a conference proceedings volume consisting of papers presented in the OSG sessions at AIC Annual Meetings.

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This article is published in the *Objects Specialty Group Postprints, Volume Twenty-Four, 2017*. It has been edited for clarity and content. The article was peer-reviewed by content area specialists and was revised based on this anonymous review. Responsibility for the methods and materials described herein, however, rests solely with the author(s), whose article should not be considered an official statement of the OSG or the AIC.

THE COMPREHENSIVE RETREATMENT OF A RENAISSANCE TERRACOTTA ALTARPIECE BY BENEDETTO BUGLIONI

RACHEL C. SABINO

This article describes the treatment of a monumental Renaissance glazed terracotta altarpiece that included disassembly of segments, cleaning, reassembly, aesthetic integration, and remounting. The primary focus of the article is the problematic nature of displaying these types of architectural objects in a museum context far removed from the original and the inevitable compromises that accompany the resultant choices. Some of the prosaic but often unexplored factors are considered, such as the working practices of the masons who originally installed these objects. The significance of these factors in developing a rationale for presenting the altarpiece with unfilled gaps between individual ceramic segments is a topic of special focus.

KEYWORDS: Renaissance, Buglioni, Florence, Glazed terracotta, Ceramics conservation, Relief sculpture, Masonry

1. BACKGROUND

Adoration of the Shepherds (1924.218) was sculpted in the Florentine workshop of Benedetto Buglioni (1459–1521) sometime around the year 1520. Significant in scale, standing at nine and a half feet tall, the altarpiece is made up of 46 individual segments of glazed, buff terracotta. It consists of a lunette and primary altarpiece bordered with a vegetal garland and footed by a predella (fig. 1). The altarpiece was given to the Art Institute of Chicago in 1924 by Kate S. Buckingham, one of three siblings whose gifts lay the foundation for the museum's collection. The altarpiece remained on display until it was removed from the galleries and consigned to storage in 2006. During its tenure in the museum's collection, the altarpiece received no significant treatment until it was designated as one of nearly 700 objects to be installed in the newly designed Deering Family Galleries of Medieval and Renaissance Art, Arms, and Armor that opened in the spring of 2017.

The initial scope of treatment had been confined to making cosmetic improvements: surface cleaning, smoothing fills, and correcting aged and discolored retouching. During a preliminary rigging to inspect the verso and evaluate the structure and condition of the existing support, it became immediately apparent that such a limited treatment would be insufficient to address the many issues that came to light, making it necessary to completely disassemble and remount the altarpiece.

1.1 Condition

The altarpiece had been mounted in two disarticulating sections using vertical wooden boards as a support, the poor-quality wood of which had become entirely desiccated. A number of the garland segments were loose, and detached ovoid fragments of ceramic associated with what appeared to be mechanical fasteners remained trapped between the backs of the segments and the backboard. Other breakages across the segments appeared to be intimately related to their points of attachment on the support. Finally, a bituminous material applied behind several of the loose lunette segments in a subsequent campaign of repair confirmed the tenuous nature of their attachment.

The ceramic segments themselves were extraordinarily unsightly. Heavy, opaque and discolored overpaint was visible uniformly throughout; it was most extreme in sections of the garland where large swathes of turquoise paint sat atop the emerald glaze of the leaves. Chips, cracks, lacunae, and steppes of varying magnitude were present alongside more serious and significant misalignments, breaks, and losses. The glazed surfaces and exposed ceramic fabric alike were stained and dirty. Important traces of manufacture,



Fig. 1. Overall view of the altarpiece before treatment. Benedetto Buglioni and workshop, *Adoration of the Shepherds*, ca. 1520, glazed terracotta, 289.6 × 200.7 cm. The Art Institute of Chicago, 1924.218 (Courtesy of the Art Institute of Chicago)

such as firing and drying cracks, had been overfilled and painted. In addition, several key geometric sight lines had been aligned in a problematic way: the verticals along the outside edge of the garland, the join between the lunette and the altarpiece, and the join between the altarpiece and the predella. Not least, a lumpy fill material had been used between all of the segments, often in the place of missing areas. This material did not lend itself to smoothing or polishing and had been covered with heavy paint, which had aged and discolored, lending the object an overall dull, poorly textured surface. The material was analyzed and found to consist of rosin (colophony) bulked with chalk; rosin is commonly encountered in 18th and 19th century restoration.¹

1.2 Display

In the former gallery installation, the altarpiece had been displayed level with the ground. In the new galleries, the altarpiece would be installed at height in a wall cavity five feet from the floor atop an altar-like plinth in an effort to suggest its original context.

2. DISMANTLING

Dismantling was done with the altarpiece in a vertical position. During this process, it became clear what the previous restorers had done. With the support lying flat, pools of colophony were ladled onto the surface. The segments were pressed into position, using colophony bulked with hair to fill gaps between the segments and the board, until the solidifying colophony produced sufficient “tack.” Once this placement was reasonably secure, they drove screws through the backboard into the segments without benefit of predrilling (fig. 2).



Fig. 2. The lunette during disassembly (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

Unsurprisingly, in many places the ceramic had been riven along planes of existing manufacturing flaws and localized areas of weakness by the force of the penetrating fasteners. The segment comprising St. Joseph's yellow mantle—the largest and heaviest, but also the most delicate due to a complex network of drying and firing cracks—had given way along fault lines from the strain, essentially rendering the segment a conglomeration of at least 10 separate fragments all bound by an assortment of screws and rosin.

The segments were mechanically removed one by one from top to bottom, starting with the lunette and, finally, the predella. Alarming, many segments could be lifted or coaxed off quite easily once the screws were removed. Many had been broken prior to attachment; these fragments were bonded with colophony prior to being screwed down. Still other breaks had been secured with iron cramps and rivets, but it was not evident whether these interventions were contemporaneous with the most recent restoration, with a previous restoration, or with the original fabrication.

3. TREATMENT OF INDIVIDUAL SEGMENTS

The treatment of the individual segments followed well-established protocols in the conservation of ceramics. The use of high-pressure steam was essential during the cleaning phase, as was a methylene chloride-based stripper for breaking down and removing heavy overpaint. Paraloid B-72 (50% w/v in acetone) was used to bond all broken segments and was bulked with glass beads to promote adhesion in cases where break edges displayed poor fit or limited surface area. Fills were done mindfully to leave manufacturing defects and glaze flaws visible, using fine casting plaster left white for larger missing areas and acrylic putty tinted with powder pigments for smaller losses. Missing ornament, most frequently within the egg-and-dart frieze, was recreated using a polyvinyl siloxane impression material. Fills of all sizes were consolidated after shaping with a 5% to 10% w/v solution of Paraloid in acetone after shaping and the backs of the segments with polyvinyl butyral (5% w/v in ethanol). Knowing that the segments would be handled copiously during subsequent stages, the majority of the retouching took place after the altarpiece was remounted. At that time, inpainting was done using acrylic paints and mediums and occasionally aldehyde colors and alkyd resin.

3.1 Evidence of Manufacture, Workmanship, and Construction

Handling the segments during these phases of work made it possible to note many aspects of their fabrication. The texture on the backs of the altarpiece and lunette segments indicates that they had been prepared on beds of sand. Each of the sculptural segments had been hollowed out at the back in an effort to achieve a uniform wall thickness for firing. To pack the forms into their molds, the craftsmen scooped with hands, punched with fists, pinched, crimped, and squeezed (fig. 3). Knife or chisel-like implements had been used to either remove or build up material or to freehand model the sculptural elements. The overlying glaze obfuscated evidence of luting or seams—particularly within the fruits, leaves, and other embellishments on the garland segments. Nonetheless, these seemed to have been made up of compositions created from smaller molds of individual fruits, vegetables, and leaves rather than unique, individual molds for each segment. Yellow glaze is present on the interfaces between a detached fragment on the waistband of St. Joseph's mantle and is the only such glaze repair found on the altarpiece (fig. 4).

Most remarkable was the technical virtuosity of the glazing and modeling. The glaze fit was superb, with hardly any fly ash, specks, orange peel, or crawling. The variety of colors, subtlety and painterly quality of the glaze application were masterful. As evidence of the sculptural ability and artistic merit, consider the figure of St. Joseph (fig. 5). There are no actual biblical accounts of St. Joseph. Thus, it is only through



Fig. 3. The artist's working methods visible on the backs of the segment depicting the Virgin Mary (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)



Fig. 4. A glaze repair on St. Joseph's waistband (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)



Fig. 5. The remarkable sensitivity demonstrated in the face and posture of St. Joseph (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

the lens of personal experience and empathic insight that his state of mind materializes: his confusion, disappointment, discomfiture, but also his resolve and dedication. These emotions are skillfully conveyed in the face and posture; the rendering is striking not just for its technical merit but also for the sensitivity of contemplation that it reflects. Received wisdom holds that Buglioni is the lower-quality alternative to della Robbia. However, this altarpiece would seem to contradict that generalized assessment. Moreover, the quality of the Buglioni oeuvre is more likely related not to deficits in the firm's technical ability but rather to its differing goals and ambitions or to the nature of the individual commissions.

No marks or notations were found impressed into the ceramic itself, save for two rather large instances of the letter "S" stamped or incised in the garland on the bottom and top outside corners of the proper left upper and middle garland segments, respectively. However, a cryptic notation system of red numerals and symbols had been painted on the side edges of the segments. A diagram plotting the notations helped to establish somewhat of a pattern: each numeral or symbol mirrored that on the edge of the segment opposite. The purpose of these notations (i.e., a possible bonding sequence) could never be ascertained. Ultimately, their presence between break edges that had been repaired using colophony would seem to place them closer to a more recent intervention rather than to the original craftsmen.

Eroded remains of gilding in the form of heavy, flat overpaint was found behind the wings on the choir of angels. This gilding strongly resembles bronze powder, making it more likely a 19th century addition.

4. TOWARD A NEW PRESENTATION

Throughout the process of treating and preparing the segments, wherein their individual peculiarities, vulnerabilities and specific needs became apparent, much ruminating and planning toward the next steps took place.

4.1 Trial Assembly

After treatment, the individual segments were staged in a mock-up. A platform was constructed and leveled with shims. After snapping out a series of vertical chalk lines, the segments were placed on the platform in accordance with these established verticals, proceeding from the lunette down, aiming for a centerline passing through the cherub at the top of the lunette and the risen Christ in the predella. During this process, inasmuch as was allowable, the segments were placed directly against each other with virtually no space left between.

4.2 Constraints and Unknowns

The trial assembly immediately demonstrated that the original relationships of all three components would be difficult, if not impossible, to recreate.

To begin with, the unglazed bottoms of the lowermost figures projected forward from the front edge of the predella by as much as 3 in. (fig. 6). Examination, albeit not exhaustive, of comparanda yielded no other exemplar in which this lower register, particularly with unglazed bottoms, projects forward so emphatically from this plane. Indeed, a palimpsest on top of the predella quite clearly highlights the original placement of the figures, which was, in actuality, quite far back from the predella's front edge (fig. 7). Placing the figures in this original position would have meant pushing the predella forward by as much as 8 in. or more. In turn, this would have meant pushing the garland forward in order to maintain its appropriate contact and alignment at the top of the predella.

This precipitated the second major problem: several elements along the proper right side (the angel's wing, the shepherd's elbow, a piece of fabric on St. Joseph's mantle, and a small tree branch) project over the garland, preventing it from moving forward. This raised the possibility that the figures had originally been somehow situated behind the garland. And yet, the inside edges of the garland segments were unglazed. It was unlikely that these raw edges would have been exposed in the final presentation and equally unlikely that mortar would have been applied on a diagonal to bridge the unglazed garland segments and the figures behind.



Fig. 6. Following trial assembly, the lowermost segments projected forward from the front edge of the predella by as much as three inches. (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)



Fig. 7. Palimpsest atop one of the predella segments indicating the original position of the figures (top) and the compromise position of the bottom segments and predella in the current configuration (bottom) (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

The garland surrounding the lunette also contained one odd short segment whose top edge indicated that it was constructed from a straight rather than an arched segment. Only half of it contained original fabric and the other half was modeled in plaster (fig. 8). The segment immediately adjacent to this truncated segment—the center segment with the cherub—was chiseled away on the proper right side.

These inconsistencies and problematic relationships began to cast doubt on whether the garland was related to the altarpiece at all or whether it had been repurposed from one of any number of garland segments in circulation within the art market.

With respect to the verticals established by the sides of the garland, the previous restorers had mounted the object askew, leaving the width at the top a full inch narrower than the bottom. With the aid of framing buttresses screwed into the platform, it was possible to ensure that in the new presentation both the top and bottom garland segments would be placed 76 in. across. Geometrically speaking, at a width of 76 in., the height of the lunette should have been 38 in. on center, but the previous mounting was also 1 in. off that dimension. Examination of the lowermost garland segments in the lunette revealed that the bottom ends had been chiseled away at an angle to achieve this flatter radius (fig. 9).

4.2.1 The Problem of Context

Very little is known about the original context, history, or trajectory of the altarpiece save for the fact that the coats of arms link its commission to Bartolomeo Buondelmonti and Alessandra Pazzi, who were



Fig. 8. Midtreatment image of the truncated lunette segment with its missing half reinstated in plaster (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

married in Florence in 1483 (fig. 10). More than likely, the altarpiece was intended for a domestic shrine or a family chapel in a church. But even with a generalized sense of context, many questions remained unanswered. Did it originally sit in some kind of concave niche that would have allowed for a shoulder or curve to accommodate the overlapping segments and the discrepancies flagged during trial assembly? Was there any stone masonry, such as corncicing or molding, that had been incorporated into the altarpiece but was discarded or lost when it was extracted? What sight lines had been imposed on the object by the



Fig. 9. Chiseled ends on the terminal segments of the garland around the lunette (left) and their reinstatement in plaster (right) (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

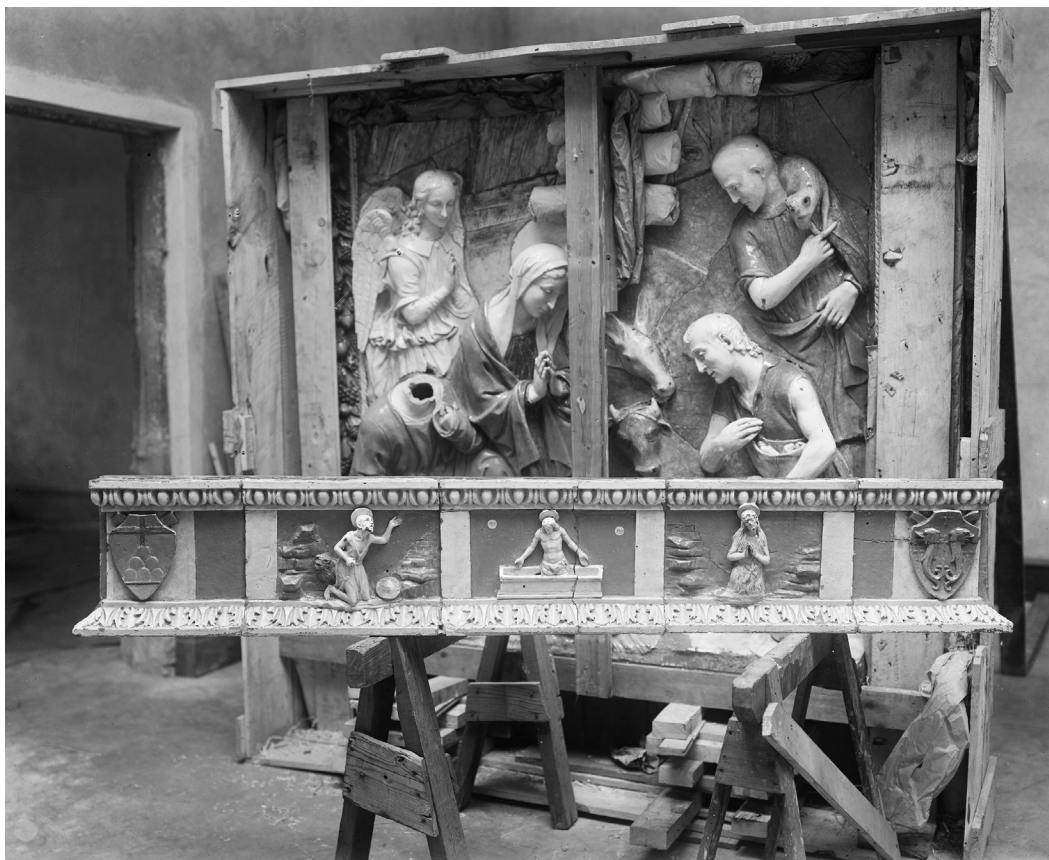


Fig. 10. Earliest documentary photograph of the altarpiece, date and location unknown (Photograph courtesy of the Art Institute of Chicago)

architecture? How constrained was the vantage point? Did the presence of an obstacle, such an altar or table, establish a minimum viewing distance?

The impending presentation in the new gallery added yet another challenge. As visitors make their way through the space, they approach the altarpiece from a three-quarters angle and are then free to maneuver around it in an almost unlimited number of angles and distances. This unconstrained vantage point most certainly would not have been how it was viewed originally.

4.2.2 The Unknown Masons

Complicating things still further, although many of the segments were planar, many others displayed pronounced warps and distortions. These are not technical deficiencies but rather natural features of the firing process governed by where the segments were placed on the kiln shelves. Nonetheless, when placed on a flat board, these dislocations sat considerably proud of the surface. This begs the question, how had these irregularities been addressed in situ? The masons certainly would have been accustomed to these kinds of anomalies and would have had a host of tricks and techniques at their disposal to rectify them (if, in fact, doing so was a priority). Surely with benefit of the amorphous back provided by a mortar, a slight impact, perhaps with a fist or mallet, would help adjust a wayward segment in relation to its neighboring segments or set the segments against each other at a slight angle.

The presence of a single hole in the top edge of each segment, with no corresponding bottom or side holes, may provide a clue as to how the masons worked. The masons likely worked from bottom to top, using iron pins or cramps in these holes to engage with the mortar bed or the masonry substructure. Anchoring each segment from the top thus creates a very flexible pivot point that would have allowed them to be adjusted in any number of directions in response to a corrective tap or blow. Such in situ adjustments surely were common practice, ultimately signifying that the masonry itself—in particular, these “job site” level adjustments and decisions—exerted considerable influence on the final presentation. The presence of a cramp or pin also meant that the segments were not placed directly against one another but rather set apart sufficiently to accommodate the breadth of the pin between them.

Remarkably little is known about this phase of the commission. Did the della Robbia and Buglioni workshops subcontract to outside masons or was the installation process managed in-house? Did a representative from the “design” side of the firm accompany the masons in every instance or did it vary according to the importance of the commission? In the case of the latter scenario, a tremendous degree of variation is to be expected. In either scenario, were the masons given a great deal of latitude in making these on-the-spot decisions or were strict parameters enforced? The knowledge gap with respect to this essential technical aspect of the work is significant.

5. DECISIONS AND RATIONALE FOR PRESENTATION

It is extremely difficult to interpret these types of objects devoid of their architectural context, but close interaction with them in the course of a treatment like this one suggests that flat backboards are not the ideal means to express much of the missing context. As a result, the most appropriate presentation is at best an educated guess. Thus, given all of the aforementioned factors and variables, how to proceed? How to arrange the segments without imposing personal judgments or creating a false presentation? How to deal with the warped segments without benefit of mortar? How to sidestep or at least not actively contradict the series of decisions that the original craftsmen and masons made? And how to make the altarpiece look acceptable from all the possible vantage points?

5.1 Garland and Predella

By the time it became clear that the arrangement would benefit from greater depth, the blueprints for the gallery were already finalized. It would not be possible to deepen the niche or make structural modifications to the wall. It would also have been unwise to try to deepen the structural assembly of the restored altarpiece. As it was, the altarpiece demonstrated a pronounced forward pitch and exacerbating that pitch would place an irregular load across the bearing surface. There was no option but to deal with a flat backboard. The predella was blocked up from behind to the minimum allowable distance wherein the figures would be set as close to the front edge of the predella as possible (see fig. 7). There was no way to avoid a resultant gap at the shoulder where the garland should have met the predella. To help camouflage this void, a strip of acrylic sheeting was laid between the figures and the predella and painted with *trompe l'oeil* to mimic the unglazed ceramic (fig. 11).

Because the altarpiece would be sited against an architectural surround with prominent and mathematically precise frames of reference, it made sense to return the garland to its true geometric proportions. The vertical segments were quite painlessly returned to parallel at 76 in. top and bottom. As for the lunette, it was possible that the original craftsmen had chiseled away the bottom edges of the lowermost segments, but improbable that they would have been improvising to this degree on a



Fig. 11. Left: Strip of acrylic in its correct position above the predella at proper left prior to painting. Right: Acrylic installed after painting. The back of the strip was painted black to mask the mount infrastructure below. The front was painted to match the unglazed ceramic in line with its actual depth.

commission of this stature. It seems more likely that they would have been guided by the overarching principles of Renaissance art—a period hallmarked by mathematical principles, balance, and harmony. The missing material was therefore reintegrated on both segments; the resulting arch did, in fact, result in an upper measurement of 38 in. on center (see fig. 9). This same logic was applied to two garland segments on the proper right side whose rope braids had also been chiseled away. A visual disruption of this magnitude within the decorative elements was unlikely to have been acceptable to the Buglioni craftsmen or their surrogates; thus, the missing braids were reinstated.

The predella segments were not uniform in height; thus, it was necessary to evaluate whether it was more critical to harmonize the sight line established by the top in relation to the altarpiece or the bottom in relation to the plinth. In the end, the upper sight light appeared more crucial. Therefore, an epoxy putty cast, set back slightly from the front edge and painted to match the glaze, was used to help camouflage the resultant discrepancies between the bottom of the predella and the plinth.

5.2 Interior Segments

With the position of the garland and predella established, the next task was to orient the segments within the available space inside. A diagram illustrating how the previous restorers chose to arrange the segments reveals a considerable amount of empty space to navigate, even when factoring the inch of space consumed along the top edge by the downward movement of the lunette in the arch compression (fig. 12). A considerable gap ran along the proper left side, but the most significant gap was left underneath the lower figures. These segments had been built up on a pad of colophony that held the figures up on a diagonal, extending up 2 in. on the proper right and 3 in. on the proper left (fig. 13). Once again, a search for comparanda yielded not a single instance in which the lowermost segments sit above the predella without benefit of some kind of lifts or platforms. Does this mean there were other ceramic segments now missing? Or would the masons have placed some ad hoc structure in the void during installation that got destroyed when the altarpiece was extracted from its original position?

The massive gaps around the perimeter (including the large gap that the restorers left between the lunette and the altarpiece) belied a shortage of available space. Yet, material had been reduced and chiseled away from the edges of several segments along the proper right side: from the angel and from the tree on the uppermost segment. Why did the previous restorers struggle to achieve a decent fit?

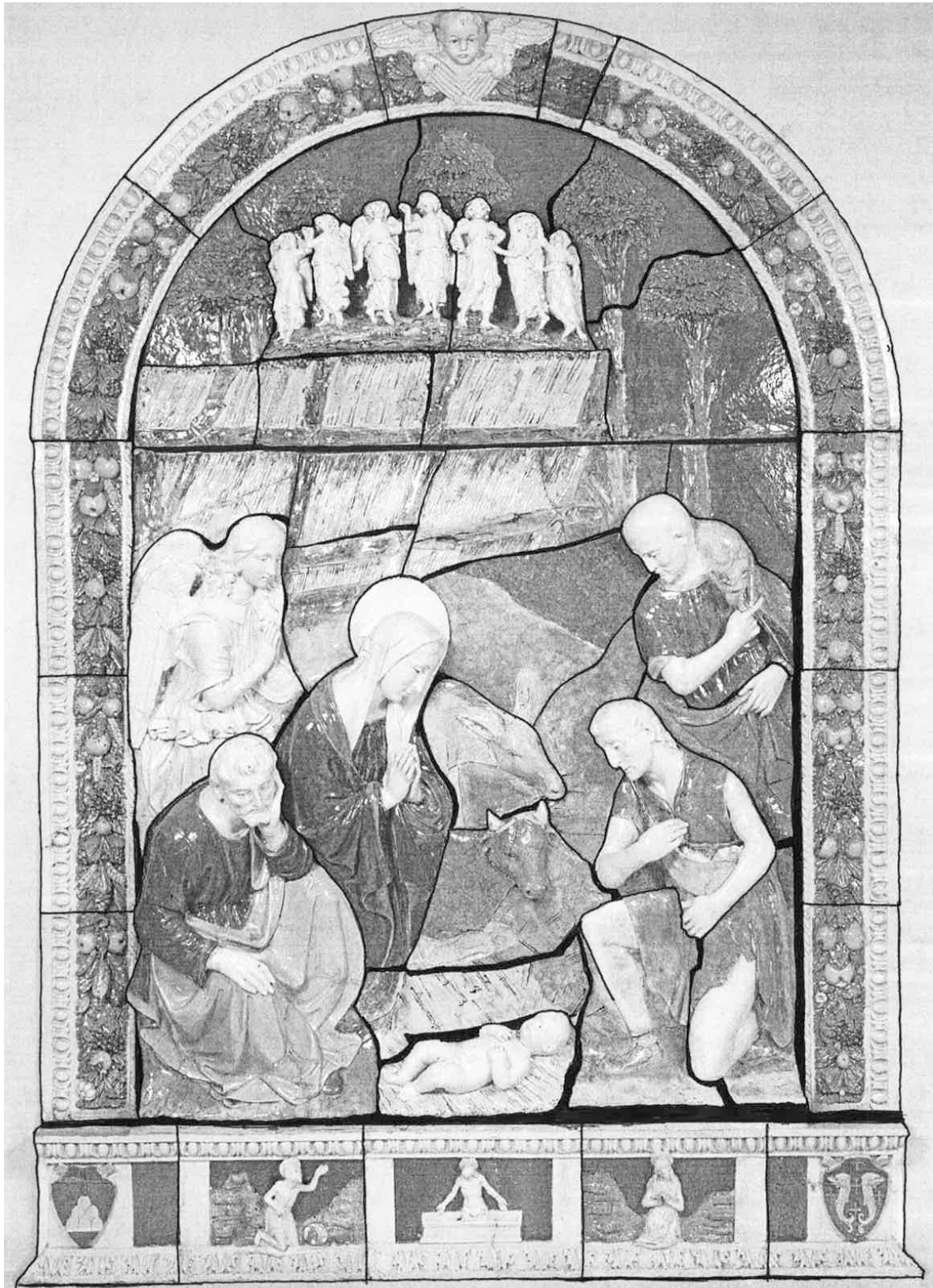


Fig. 12. Diagram showing placement of the segments in the previous restoration (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)



Fig. 13. Massive pad of colophony below the figures in the previous restoration (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

This question became all too apparent with increased handling and repeated efforts to achieve a satisfactory placement. So often, a virtually inconsequential segment exerted a disproportionate amount of influence in the placement of the surrounding segments. For instance, one small, dumbbell-shaped segment with a pronounced convex distortion exclusively governed the interrelationship between St. Joseph and the kneeling shepherd. Once again, these material problems begged the question, “What would the masons have done?” They no doubt would have had strategies to more effectively set the segments against one another to achieve a satisfactory presentation even if it meant setting them together slightly out of plane—strategies that were unavailable on a flat, rigid backboard.

Weighing everything, the best course of action was to abstractly explode the segments within the available space to create as harmonious and regular a presentation as possible and, to the extent that the many sight lines would accommodate it, displace the most egregious of the gaps up into the shadows created by the projecting figural segments (fig. 14). There was no choice but to leave somewhat more space beneath the figures relative to the rest of the gaps, but they were arranged in balance with the flow of the gaps elsewhere. Unlike in the previous presentation, this gap was regularized, siting the figures along a level rather than diagonal plane. As for the void between the figures and the predella itself, it seemed unethical to fill the space with some kind of invented, extrapolated feature, particularly when the new sight line at eye level would lend it undue prominence. Instead, casts of epoxy putty were made to support the bottom segments and to bridge the space between them and the predella. The casts were recessed slightly from the outermost edge and painted a neutral color similar to the glaze on the predella (fig. 15).



Fig. 14. The altarpiece at the close of treatment, installation, and finishing (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

5.3 The Question of the Gaps

The issue of how to deal with the gaps remaining between the segments was the leading question not only from visitors, internal colleagues, and curators who visited the *Adoration* over the course of its treatment but also from exterior colleagues and curators working contemporaneously on similar objects across the country.² Over the course of the year, the collective group of people immersed in Renaissance glazed terracottas had come to a generalized consensus to leave the gaps open and that doing so constituted a new vernacular for the presentation of these objects. However, this rationale was never formally or fully



Fig. 15. The casts beneath the lowermost figural segments (Photograph by Rachel C. Sabino, courtesy of the Art Institute of Chicago)

articulated, which made justifications awkward when presented to people outside this small community. After all, it is somewhat of an unorthodox idea; in the original context, there is something between the gaps—mortar.

Whether or not those mortars were originally tinted to create a seamless field is debatable. The majority of the mortars remaining in situ do not appear to be tinted, but this does not mean that they were not tinted originally. Systematic analysis and cataloguing would be necessary to clarify that question with any certainty. However, the mortar joins are rougher than the adjacent glazes. This texture would have stood in contrast with the segments even if they had been tinted, especially where they do not follow the contour of a figure or feature but instead appear across comparably flat areas, such as within an expanse of sky. Was this, too, another aspect over which the masons had control? Did they use finer mortars for some gaps and courser mortars for others? Were they given any latitude to tint the mortars to aid in blending them with the surrounding area? Was the appearance of the mortar lines a determining factor in how the segments were placed during installation? Whatever the answers to these questions may be, examination of assemblages remaining in situ demonstrate that an entirely smooth, unsegmented presentation was not the desired aesthetic or was simply not attainable.

Architectural terracottas that are no longer in context, essentially all of those on view in museums today, have most often been filled and tend to reflect a 19th century sensibility for completion. On these types of objects, it is possible to see a great deal of overfilling and overpainting, frequently done over misaligned, misshapen, or stepped segments, to create a uniform presentation.

So—how to answer this question of the gaps, not just for the benefit of the niche professional but, more importantly, for the lay visitor who has been conditioned one way or another to expect the gaps to be filled? Devoid of context and devoid of all of the secondary workmanship that is actually crucial to their ultimate appearance, these objects cease in some way to be what they once were; they are no longer technically altarpieces. They are abstractions: a collection of ceramic pieces that once constituted an altarpiece. The distinction is subtle but important. The material between the segments is not just a mere functional substance holding the object together but rather a symbolic material, cementing the object into a specific moment in time. The lowly and insignificant mortar and the unglamorous work done by

an unknown mason is every bit as essential to the object's history, vision, interpretation, and perception as are the segments themselves.

By way of analogy, consider a pilot's flight plan. For every one degree of deviation, the destination is missed by 92 feet for every mile traveled off course. Therefore, the key to success is recognizing an off-course trajectory at the earliest opportunity. Extrapolating to treatment decisions on the altarpiece, if the plan was to fly from New York to Los Angeles, that first "one-degree" moment came in placing the figures relative to the predella. Each subsequent decision thereafter was a step further removed from the original appearance and context. Thus, the question of whether to fill the gaps is essentially the difference between landing in Burbank and floating in a life vest 40 miles out in the Pacific Ocean. Neither of the outcomes is the same as landing in Los Angeles, but one is considerably safer. Had it somehow been possible to recreate the exact context of the *Adoration* and guarantee the original position of the segments, filling between them with a rough material to simulate mortar might have been a responsible option. Failing that, the other option would have been to fill the gaps but perhaps recess them slightly from the surface. However, this approach raises questions of its own and, quite possibly, interjects an incongruous and inappropriate sensibility.

6. ASSESSMENT

Many of the segments did seem to relate to one another masterfully: the interrelationship between St. Joseph's shoulder and Mary's cloak and between the kneeling shepherd's arm and the background segment, for example. Losing those relationships was a painful sacrifice in achieving alignment in other areas that would have caused severe dislocations and jarring gaps throughout. More time to evaluate and consider different placement options would certainly have been welcome.

The unfilled gaps between segments are jarring—it is ironic that the most cautious and conservative option for compensation actually yielded the most radical presentation. Were it possible to have the opportunity to "do it all again" only with more planning available at the conceptual stages of the gallery design, it would have been interesting to construct an architectural framework within the wall itself that more closely approximated the original architectural context. Working along these lines, it would have been fruitful to partner with a historic masonry specialist, preferably one with a background in the use of lime mortars to guarantee a certain sensibility of material selection and application. In so doing, the gaps between the segments could have been filled in the same manner and with the type of material originally specified.

7. FURTHER DIRECTIONS

With respect to the unfilled gaps, it is essential to find some way to effectively relate the conceptual decisions underpinning the visual outcome of this and other recent retreatments to audiences who, more than likely, have difficulty interpreting the works in their new contexts. Conservators should work alongside their curatorial colleagues to produce expansive didactic information to accompany these objects while on display.

Most importantly, collaboration with archival specialists, researchers and historians is crucial to unearth as much information as possible about the little-understood structure, involvement, and working relationships of the related professionals who collaborated with the della Robbia and Buglioni firms,

namely: stone masons, brick and block masons, material suppliers, architects, project managers, and other laborers.

ACKNOWLEDGMENTS

A project of this scale by definition involves a large number of people. I am appreciative of the collective effort by so many to assist me in my work. Among this group, a few individuals deserve particular commendation. My friend and erstwhile colleague, Elena Valentinova King, paintings conservator in private practice in Chicago, graciously volunteered her time during the onerous process of taking down and smoothing fills. For their unflagging support and encouragement, I am extremely grateful to Wendy Walker and Carolyn Riccardelli at The Metropolitan Museum of Art; Lisa Bruno at the Brooklyn Museum; and Abigail Hykin, Richard Newman, and Marietta Cambareri at the Museum of Fine Arts, Boston. At the Art Institute of Chicago, I wish to recognize Frank Zuccari, Grainger Executive Director of Conservation and Senior Paintings Conservator, for backing the myriad expeditions and fact-finding missions associated with my background research, and curators Rebecca Long and Martha Wolff for their consistent enthusiasm and trust in me. Jann Trujillo submitted endless orders for crucial materials, often at the last minute. Wholehearted gratitude to Lauren Schultz, Director of Communications, for giving the treatment a much-deserved public face. Above all, I am indebted to mount maker Andrew Talley, of Talley & Talley in Chicago, without whose immeasurable talents, experience, and resilience this project would not have been possible.

NOTES

1. The rosin and chalk were identified by Ken Sutherland using FTIR spectroscopy and pyrolysis gas chromatography mass spectrometry with thermally assisted hydrolysis and methylation (THM-Py-GCMS). For FTIR analysis, representative portions of the sample were mounted on a Specac diamond compression cell. Data were collected in transmission mode between 4000 and 400 cm^{-1} at 4 cm^{-1} resolution and 128 scans per spectrum using a Bruker Hyperion microscope with MCT D315 detector, interfaced to a Tensor 27 spectrometer bench.

For THM-Py-GCMS, a portion of the sample ($\approx 10\text{--}20\ \mu\text{g}$) was placed in a Frontier Lab stainless steel sample cup and 2 μL of a 25% solution of tetramethylammonium hydroxide in methanol added prior to insertion into a Frontier PY-2020iD vertical microfurnace pyrolyser, with the furnace at 550°C. The pyrolyser was attached to a Varian 3800 GC, with Restek Rxi-5ms column (30 m, 0.25 mm i.d., 0.25 μm film), interfaced to a Saturn 2200 MS; transfer line temperature 300°C. The oven was programmed from 40°C, with a 2 min. hold, then increased at 20°C/min. to 300°C and held isothermally for 10 min.; total runtime 25 min. The inlet was operated with a split ratio of 1:10. Helium was the carrier gas, with a constant flow of 1 mL/min. The MS was run in scan mode (m/z 40–600) with the ion trap at 210°C.

2. The treatment of *Adoration of the Shepherds* happened during the same period of time that wholesale retreatments of other architectural glazed terracotta objects were in progress at The Metropolitan Museum of Art and the Brooklyn Museum in preparation for an exhibition organized by the Museum of Fine Arts, Boston. Both of these treatments are described in this volume.

FURTHER READING

- Cambareri, M. with contributions by A. Hykin and C. Harris. 2016. *Della Robbia: Sculpting with Color in Renaissance Florence*. Boston, MA: MFA Publications, Museum of Fine Arts, Boston.
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- Cooper, D., and M. Leino. 2007. *Depth of Field: Relief Sculpture in Renaissance Italy*. Bern: Peter Lang.
- Marquand, A. 1921. *Benedetto and Santi Buglioni*. Princeton, NJ: Princeton University Press.
- Vasari, G. 1912–1914. *Lives of the Most Eminent Painters, Sculptors, and Architects*. Translated by Gaston du C. de Vere. London: Philip Lee Warner.

SOURCES OF MATERIALS

Acetone, Ethanol

Thermo Fisher Scientific
81 Wyman St.
Waltham, MA 02451
800-766-7000
<http://www.fishersci.com>

Acrylic Medium, Golden Porcelain Restoration Glaze (Gloss), Acrylic Paint, Golden Fluid Acrylics

Golden Artist Colors, Inc.
188 Bell Rd.
New Berlin, NY 13411
607-847-6154
<https://www.goldenpaints.com/products/>

Acrylic putty, Modostuc

Plasveroi International
Via Camussone 38
Frazione Giovenzano
Vellezzo Bellini (PV) Italy
+39 382 926895
http://www.antichitabelsito.it/schede/stucco_modostuc.pdf

Acrylic Resin, Paraloid B-72

Dow Chemical
800-331-6451
<https://www.dow.com/en-us/pdp.paraloid-b-72-100-resin.154799z.html>

Aldehyde Colors, Gamblin Conservation Colors, Alkyd Resin, Galkyd Medium #1

Gamblin
323 SE Division Pl.
Portland, OR 97202
503-235-1945
<https://conservationcolors.com/>

Epoxy Putty, Apoxie Sculpt Modeling Compound

Aves Studio

PO Box 344

River Falls, WI 54022

<https://www.avesstudio.com/shop/apoxie-sculpt/>

Glass Beads, Very Fine #59832

Kremer Pigmente

247 W. 29th St.

New York, NY 10001

212-219-2394

<http://shop.kremerpigments.com/en/fillers-und-building-materials/fillers-made-of-glass/5647/glass-beads-very-fine>

Paint Stripper, Zip Strip Premium Paint Finish and Remover

Recochem Inc.

550 Hills Dr., Suite 106

Bedminster, NJ 07921

800-361-6030

http://www.recochem.com/us/products/solvents_cleaners/zip_strip_premium_paint_finish_remover

Plaster, Fine Casting Plaster

Sculpture House, Inc.

3804 Crossroads Pkwy.

Fort Pierce, FL 34945

772-210-6124

<https://www.sculpturehouse.com/p-236-pristine-white-casting-plaster-25-lbs.aspx>

Polyvinyl Butyral, Butvar B-98

Eastman Chemical Company

200 South Wilcox Dr.

Kingsport, TN 37660

423-229-2000

<http://www.eastman.com/Products/Pages/ProductHome.aspx?Product=71095422&list=products>

Polyvinyl Siloxane Putty, Aquasil Soft Putty

DENTSPLY DeTrey GmbH

De-Trey-Str. 1

D-78467 Konstanz Germany

+49 7 531 5830

<https://www.net32.com/ec/aquasil-soft-putty-regular-set-standard-includes-d-111697>

Steam Cleaner, Derotor GV6

Preservation Equipment Ltd

Vinces Rd.

Diss, Norfolk IP22 4HQ UK

+44 1379 647400

<https://www.preservationequipment.com/Catalogue/Equipment-Tools/Instruments-Meters/Derotor-Steam-Cleaner>

RACHEL C. SABINO, objects conservator, has been at the Art Institute of Chicago since 2011. Previously, Rachel held positions at the National Gallery, London; Museum of Fine Arts, Houston; and the Chicago Conservation Center. She also directed private practices in both Zürich and London. She has undertaken internships at The Metropolitan Museum of Art and the J. Paul Getty Museum and a sabbatical at the Corning Museum of Glass. She earned a BA in Art History from Trinity University, a postgraduate diploma in Conservation and Restoration from West Dean College/University of Sussex, and a certificate in conservation of marine archaeology from the Institute of Nautical Archaeology. Rachel has been a professional associate of AIC since 2008. Address: Art Institute of Chicago, Department of Conservation and Science, 111 S. Michigan Ave., Chicago, IL 60603. E-mail: rsabino@artic.edu