

Two Aesthetic-Movement Rooms: Research and Conservation

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Conflicting objectives
created challenges
during an interior
restoration in
New York City.



Fig. 1. Seventh Regiment Armory, New York, New York, built 1880, Company Room D, mock-up of proposed treatments on a "slice" of the room, 2011. Photograph by Whitney Cox.

Located on the Upper East Side of New York City, the **Seventh Regiment Armory**, completed in 1880 to the designs of Charles W. Clinton, occupies a full city block, bounded by Park and Lexington avenues to the west and east, respectively, and East 65th and 66th streets on the south and north. The interior room decoration is a surviving example of the American Aesthetic Movement (Fig. 1). The Aesthetic Movement had its origins in England and was vigorously promoted by Anglo-French artist Augustus Pugin and art and architectural critic John Ruskin. In the United States, its popularity began with the Philadelphia Centennial Exposition of 1876 but lasted only until the mid- to late 1880s. The designs for the interior rooms at the Seventh

Regiment Armory were created by pre-eminent designers, notably Stanford White, Louis Comfort Tiffany, Pottier & Stymus, and the Herter Brothers. The importance of the interiors is heightened by the fact that, other than a handful of museum rooms, few intact period rooms designed by these firms can be experienced by the public. In recognition of its architectural, social, and historic significance, the armory was designated a National Historic Landmark in 1986 and a New York City landmark in 1967 (exterior) and 1994 (interior).¹

The armory is owned by the State of New York, which leases the building to the Seventh Regiment Armory Conservancy. The conservancy, now known as the Park Avenue Armory Conservancy, has adapted the building from its fortress-like structure to a multipurpose arts venue visited by thousands of patrons (Fig. 2).

Soon after taking control of the building, the Park Avenue Armory Conservancy retained a team of consultants, including architects, engineers, and conservators, to study the building and develop an overall approach for a phased renovation. There was no preconceived notion about what the design approach should be; however, there was a strong desire to retain a sense of the passage of time and its effects on the building while simultaneously celebrating the outstanding design work found throughout the building. It was already known that the interior spaces had undergone numerous alterations over the years, but it was not known if earlier and original finishes remained under later, less significant alterations; what their condition was; or whether it would be possible to reveal them. Because the ability to achieve the project goals would depend heavily upon what was learned about the existence and condition of historic interior finishes, the design team's research conservator, Building Conservation Associates, Inc. (BCA), worked in close collaboration with other team members during the investigation phase; this stage took place prior to the selection

of a contract conservator who would implement the selected treatments. The steady stream of findings from the field investigation provoked spirited discussion about the design approach as the

practice, the research conservator monitored the implementation as a function of the design team's construction-administration role. The significant difference between the conventional roles



Fig. 2. Seventh Regiment Armory, looking southeast, 2015. All images by Building Conservation Associates unless otherwise noted.

project evolved and as BCA determined what could be revealed, based on what had survived the many alterations over time and on the technical limitations imposed by materials and conditions.

The authors led the research-conservation team's effort to investigate conditions and determine appropriate strategies for treatment of the interior-finish materials. This paper focuses on the challenges related to the transition from the research and design phase to the construction phase, each phase carried out by a different conservation firm. Following conventional building-industry practice, the research conservator specified the treatment; a construction manager invited bidders; and the contract conservator carried out the treatments. Also following normal

of architects and building-trade contractors outlined above as opposed to those of the team on this project is that the skills and professional practice of the research conservators and contract conservators have a great deal in common. Since conservators are trained to make ethical and technical decisions independently, the presence of two conservators during execution had to be deliberately managed to avoid conflict.

Because this paper is focused on the relationship between the research conservator and the contract conservator, specific technical information about



Fig. 3. Portion of Company Room D ceiling. Cast-plaster panels had been nailed over the original 1880 painted finishes. Here, several of the panels have been removed.



Fig. 4. Company Room E, detail of ceiling showing small-scale test of removal of overpaints. The process involved several separate steps, each with a different paint-ripper formulation.

treatments is provided as background and only as required to understand the discussion of professional practice.

The design work moved through a sequence of phases, starting with archival research to gain as much understanding as possible from available documentation, followed by physical investigation of the spaces, including the opening of probes. In many spaces, the original finishes remained, in varying conditions, under later layers, and small-scale testing in-situ suggested that they could be revealed on a larger scale. Some of the 1880 finishes were relatively easy to expose (Fig. 3). Exposure of others was much more complex, requiring careful removal of several layers of over-paint (Fig. 4).

Once it had been confirmed that highly significant original decorative work survived under later alterations, the design team and client considered the philosophical implications of removing later layers to reveal concealed historic finishes. The decision was made to do so where it could be fully justified by the physical and archival evidence. Some of the materials that would be removed to reveal the 1880 work were installed prior to 1900. None, though, were designed or constructed by masterful architects, decorators, artists, or artisans, and often the quality of materials and workmanship of the later work was poor. The overriding factor was that the significance of the 1880 finishes and their designers was far greater than the later layers, and the project was seen as an opportunity to reveal some of the few remaining examples of the work of preeminent American designers. Given the importance of the original artists and designers and the complexity of the designs, the team considered the original finishes to be more akin to fine art than architectural decoration, and the initial approach to treatment options incorporated this belief.

The investigation confirmed that in some instances sections of the target layer were missing or damaged due to previous episodes of water infiltration, cracks in substrates, and impact damage from various uses of the rooms over the course of time. The desire to evoke the

passage of time in the rooms led to the decision to accept distressed surfaces, unlike the more conventional approach of replicating losses and freshening the target layer with new paint. There is an inherent tension in this approach, between the appeal of distressed authenticity and the fundamental motivation of the original esthetes to create the most beautiful effect for its own sake — the essence of the Aesthetic Movement. The tension was resolved by a solution proposed by Herzog & de Meuron that involved reversible treatments applied over some of the revealed surfaces intended to stitch together and harmonize discontinuities and losses with related but clearly contemporary patterns.

Pilot Project

Because of the complexity of the issues and uncertain cost of implementing the desired approach, the Park Avenue Armory Conservancy decided to undertake a pilot project to evaluate the issues involved with putting the design approach into practice, prior to proceeding with large-scale construction projects. The goal of the pilot project was to reveal the original finishes in selected spaces in order to return them to an appearance that reflected the original composition, even if distressed, without “restoring” the finishes. The focus was on determining techniques that would result in the maximum retention of original finishes in the best possible condition.

Two second-floor rooms were selected for the pilot project: Company Rooms D and E, which were originally decorated by Pottier & Stymus, a prominent New York City-based decorating firm. The rooms are large, each measuring approximately 40 feet long and 25 feet wide, with 18-foot-high ceilings. Both rooms have been altered several times over the years (Figs. 5 through 8).

Original finishes in the two rooms shared attributes of the standard design template for all the company rooms. Both had hardwood floors, wood paneling, and wood uniform lockers lining the lower half of the walls and decoratively painted finishes on plaster on the upper half. Each also contained

large wood windows and doors with ornate wood surrounds and decoratively painted plaster ceilings. Finishes on plaster were created using a combination of metallic flake paints and oil paints applied first as field and then as stenciled and freehand work in designs associated with the Aesthetic Movement. In many cases, the original walls and ceilings had been entirely covered over with monochromatic over-paint or some other material; sections of the Company Room D ceiling were covered with nailed cast-plaster panels, while the Company Room E walls had two layers of later wall coverings over the original painted surface. Thus, although the original geometry, volume, and circulation of the rooms was preserved, the rooms experienced significant decorative alterations affecting the integrity of the original design.

Discovery. The client preferred to competitively bid the construction work for the pilot project and had a strict budget for the construction. It was agreed that detailed testing and investigation by the research conservator would allow for the development of a set of documents that would describe the work in sufficient detail to permit comparable, competitive bids.

The design phase of the pilot project began with small-scale testing. Results produced by the research conservator were continually evaluated by other members of the design team and the client to evaluate the achievable appearance and to allow for ongoing development of the overall design approach in response to the findings of the tests.

The testing afforded the opportunity to refine products and techniques in anticipation of creating technical specifications. The testing process also provided insights into issues that might affect the general work and therefore needed to be addressed in the bid package. For example, testing revealed that the original artists and artisans, as well as those responsible for alteration campaigns, made changes during the course of completing their work. This meant that conservators developing techniques for removal of over-layers could not be



Fig. 5. Company Room D, shortly after completion in 1880. Photograph by Pach Brothers, courtesy of New-York Historical Society.

Fig. 6. Company Room D in 2007, at the start of the investigation phase of work.



Fig. 7. Company Room E, shortly after completion in 1880. Courtesy of New-York Historical Society.



Fig. 8. Company Room E in 2007, at the start of the investigation phase of work.

certain their techniques would achieve consistent results. This finding placed a greater emphasis on the development of techniques for exposing the original finishes that were custom-formulated; site-specific recipes were developed to allow for refinement during the course of work to address local conditions, such as the number of paint layers or components in the paints (Fig. 9). This finding also led to the decision to include a requirement in the specifications for on-going sampling and review of layering sequence to track changes that might impact products and techniques.

Mock-ups. As the treatment drawings and specifications were formulated and costs and schedule were assessed and refined, several issues led to the decision to produce a large-scale mock-up of all recommended treatments. Issues included overall complexity, lack of clarity about the final overall appearance of the rooms following removal of over-layers, and uncertainty about likely cost because of the limited knowledge of the amount of time it would take to perform many of the treatments. Creation of a mock-up prior to finalizing a bid package was expected to be beneficial not only to the design process; it would also benefit the bid process because all bidders would have the same understanding about the desired final effect.

In each room, an area approximately 8 feet wide was selected. In this area all recommended treatments were performed on a section of the room that included the floor, the cabinets, the walls, and the ceiling. Stationary pipe-frame scaffolding was erected in each room, and BCA conservators, assisted by interns retained by the Park Avenue Armory Conservancy, used the techniques developed during small-scale tests to create samples of the anticipated final product on the wall and ceiling surfaces (Fig. 1).²

A review of the completed mock-ups gave important information about process, anticipated cost and schedule, and final appearance. For example, prior to the creation of the mock-ups, the architects had intended to leave the exposed painted surfaces unvarnished. However,

after the decoratively painted finishes were revealed, the team was not satisfied with the appearance and chose to experiment with the application of a varnish coat, in order to even out variations that detracted from the viewer's ability to "read" the overall design and because the general consensus of BCA and the client was that varnish would provide long-term protection to the paint.



Fig. 9. Company Room D, showing Melissa McGrew of BCA testing non-proprietary paint removal formulations on the wall, 2010.

Project specifications. Following completion of the mock-ups, the technical specifications were completed. Paint-conservation projects often allow conservators latitude to propose their own techniques to achieve the stated goals. However, this practice was discouraged during bidding because the client required comparable competitive bids and assurance that the work could be done within a strict schedule. The enormous amount of data that had been collected during the investigation

was distilled into technical specifications that provided bidders with defined processes from which to develop a price for the work. There were ten different decoratively painted elements in the rooms. Each element had different types and numbers of layers over the original work, and each required its own process to reveal the 1880 finishes. Therefore, the technical specifications became a glossary of products, recipes, and methods. This information was provided with the understanding that the successful bidder might suggest alternative methods, if they could demonstrate the same result for the same or lower cost and within the same schedule.

In spite of having pre-qualified the conservators, the specifications were developed assuming varying levels of expertise and cooperation from the winning bidder; therefore, it was necessary to include a tremendous amount of detail in the specifications to accommodate any outcome of the bid process.

Bid phase. Bidders were provided ample time to inspect the large-scale mock-up, but more than one expressed some concern that, without having hands-on access to test the specified techniques, it was difficult to accurately judge the amount of time it would take to implement them. The owner and design team decided against allowing each bidder to perform pre-bid testing. One reason was the likelihood that each bidder would use the opportunity to develop alternate techniques and that this would diminish the ability to compare bids received and to award a contract within the constraints of the project schedule. Instead, conservators from BCA performed a demonstration of one of the specified over-layer removal techniques, and bidders were told that the successful bidder would be given the opportunity to propose alternative techniques. For the demonstration, the Company Room D walls were stripped to the 1880 layer, both because the Company Room D walls were one of the largest elements slated to be treated and because the sequence and types of treatments were similar to many of the treatments specified for other elements in both of the rooms.

The specified treatment for the Company Room D walls had four primary components: 1) mechanically remove a thin, poorly adhered outermost layer; 2) mechanically abrade the coatings exposed by the first mechanical removal by sanding (the number of existing layers at step two varied depending on location in the room); 3) apply a solvent-based gel to soak through the abraded layers and soften a thicker layer beneath; and 4) mechanically remove the gel and softened layers to expose the 1880 decorative finishes.

The demonstration gave all bidders the same information about the estimated amount of time it would take to expose the 1880 surface. It also clarified why certain techniques had been selected. The poor adhesion of the topmost layer to the layers beneath was clear from the way in which it cleaved readily from the surface using only a scalpel blade. The degree to which the next set of layers had to be abraded to allow the subsequently applied solvent-based gel to penetrate was apparent from the uneven appearance of the surface following the sanding procedure.

In addition to estimating the staff and time needs for the actual treatments, bidders also had to decide how they would address the lead-based-paint containment issues for a project to be done in a fully occupied building.

Construction phase. The selection of contract conservator was made on the basis of cost, the ability to meet schedule, and the conservator's work practices. Foreground Conservation & Decorative Arts, in a joint venture with EverGreene Architectural Arts, was the successful bidder. As soon as the project was awarded, the contract conservator expressed a desire to learn as much as possible about the testing done by Melissa McGrew and Brian Powell of BCA. The early stages of the construction phase are the best opportunity to experiment with modified techniques that might accelerate the work process; therefore, the contract conservator needed more detail about what had been learned during the testing phase in order to review potential alternative techniques.

Initial information was transmitted during in-depth conversations in person and by telephone. These conversations proved to be most useful after the contract conservator had some amount of time to test the techniques on site, as the number of questions about the technique increased as the contractor worked with the products and processes. On several occasions, prior to start of general work, BCA conservators met on site with the contract conservator to demonstrate additional techniques. After a pipe-frame scaffold was erected in each room and workers were fully suited up in personal protective equipment appropriate for the removal of lead-based paints, the general work commenced, facilitated by ongoing meetings and discussions between research conservator and contract conservator.

Discussion

The transfer of knowledge from the research conservator to the contract conservator was critical for a successful project. Such communication was possible on this project because the research conservator (BCA) and contract conservator had complementary skills (for example, BCA's staff had expertise and academic training in paint chemistry, while the contract conservator had more experience working on very large surfaces) and because the research conservator had spent significant time in the field developing hands-on expertise with the specific materials in the two rooms. Both conservation-science knowledge and hands-on work were crucial parts of the design process; the laboratory testing followed by field testing was essential for developing specifications that not only gave sufficient information to allow for competitive bidding but also gave confidence that the specified techniques would perform as desired. The degree of confidence was increased because all processes were actually implemented during the creation of the large-scale mock-up.

The hands-on work done during the design phase became particularly useful to the contractor because the early stages of the construction phase in-

involved not just a transfer of the method that worked during design-phase testing but also information about the behavior of the materials during that testing process. For example, during the testing phase, the research conservator found a straightforward way to mechanically remove the outer layer of paint from the Company D walls; it became clear after spending some time working on the surface that there was consistently good cleavage between the top layer and the next layer. But small-scale testing in the laboratory followed by on-site testing of chemical rather than mechanical means made it clear that there were other options; there were, for instance, solvents that would solubilize the top layer without affecting the layers beneath. Having this range of knowledge, and not just learning the specified technique, allowed the bidders and then the contract conservator to assess and develop their own potentially time-saving techniques. In fact, after observing the BCA conservators employ a scalpel blade to easily remove the top layer, Foreground experimented with a "strappo" technique for the removal of this layer. This allowed them more flexibility in the skill set and number of workers needed to perform this initial process and better contained the lead-containing paint chips.

As the construction progressed, original expectations had to be re-examined and, in some cases, modified. Only after very large surface areas had been revealed and studied did the design team realize that perfectly executed exposures, using time-consuming fine-art techniques, were not essential to realize the design intent. Additionally, it was found that the budget and schedule could not be met unless the specified technique was "scaled up."

The basis of the modifications was the acceptance that decoratively painted architectural surfaces, no matter how significant, should be treated differently from fine art. The reality is that the combination of the scale of the architectural elements with the budget and schedule pressures of a typical construction project mean that the techniques used to conserve, clean, and de-layer large, decoratively painted surfaces on walls and ceilings need to be different



Fig. 10. Company Room D, detail of ceiling, 2011. Overpaints were only partially removed. At the bottom half of the image, the surface is unvarnished, and overpaints are visually distracting. The top half of the image is the same surface but with a varnish applied to it. The overpaints are still visible, but the impact is muted by the saturation of the colors that comes with application of a varnish.



Fig. 11. Company Room E, detail of ceiling, 2011. The whitish color is the thin, resistant overlay; at the bottom left quarter of the image, it has been removed.

from those used to conserve, clean, and de-layer fine art. The pressures of the typical construction project — cost, schedule, programmatic needs — must be taken into account when developing the work process. The following examples make this reality clear.

Case 1: varnish. There was discussion throughout the design phase about varnishing the revealed surfaces. Fragmentary evidence had suggested that the surfaces were originally varnished. Also, a varnish protects the target layer. However, it alters an exposed, unrestored, and slightly distressed painted surface in a way that was never intended or seen before. Given the project approach, the discussion focused on the visual effect a varnish would have on the de-layered surfaces and whether the varnish would compromise the fidelity of the authentic (distressed) surface finish.

A varnish coat will saturate colors and conceal the haze that may remain following incomplete removal of over-paints. A decision not to varnish would require the highest level of care in removing the over-paint, cost more, and take longer. Without knowing what the final treatment and appearance would be, varnishing was not originally specified. However, during construction, once it was clear that the contract conservator could complete the work far more rapidly if remnants of over-paint were left on the surface and then concealed with a varnish coat, the team elected to apply a coat of varnish to stay in budget and on schedule. The implication of this decision is that these surfaces will always need a varnish to achieve the level of appearance they currently have (Fig. 10).

Case 2: acceptable risk factor. The Company Room E ceiling had been over-painted several times, and no extant documentation illustrates its entire original design. Small-scale tests during the design phase suggested very intricate patterns, with four different motifs and freehand paint over stencils. During the course of creating the small exposures, BCA found a very thin layer directly over the 1880 paints that was resistant to removal. Its presence seemed to jus-

Only after very large surface areas had been revealed and studied did the design team realize that perfectly executed exposures, using time-consuming fine-art techniques, were not essential to realize the design intent.

tify the use of aggressive techniques to rapidly remove over-paints to that layer, followed by a much slower process to remove the last thin over-layer. But if the resistant layer was not consistently present across the surface, the products used for bulk removal could damage or even strip the target layer. Therefore, the specifications called for the use of field microscopy and periodic review of removed samples in the laboratory to continually confirm that the resistant layer was ubiquitous.

The contract conservator could move through the work much more rapidly if the work was not interrupted by periodic checking. It was decided that the level of risk associated with not checking was acceptable, and the work proceeded without the sampling and microscopy. As it turned out, that last thin layer remained consistent — and consistently resistant — so that the contract conservator could rapidly do the bulk removal, a fact that could not be known until general work was close to completion (Fig. 11).

Ultimately, someone needs to decide what level of risk is acceptable. It is the responsibility of the research conservator to inform the client or owner about what level of risk is associated with each choice.

Conclusion

Conservation of highly significant painted finishes as a part of a typical construction project can involve con-

flict because the conservator's prime directive to protect the object may not conform to the construction budget or schedule. Even if project and design goals are clearly defined, there are bound to be surprises, so flexibility and contingencies are crucial. The research conservator must take time to educate the client about various outcomes associated with a specified treatment, including risk associated with aggressive methods, as well as financial implications of taking the most careful course.

The defining attribute of any building project is cost, and the optimal way to predict cost is by pre-testing and topical analysis. The choice of who does this testing and evaluation is fraught with near- and long-term implications. There are some practical reasons for allowing one conservator to test, define scope and methods, and then execute the conservation work; however, we believe there are more benefits in separating these responsibilities. Separation allows confirmation of technique because there is built-in peer review (assuming there is a willing collaboration), and it increases confidence that all alternative strategies have been considered, leading to increased probability of matching the budget. Nevertheless, we have found it beneficial to consult with potential contract conservators before the project design is finalized to reflect practical and logistical considerations. One way to balance all of these potentially conflicting motives is to plan for and maintain both a research and contract conservator throughout the project.

The separation of roles can create conflict between the research conservator and contract conservator unless there is collaboration at an early stage of the project. Working in isolation may be appropriate for conserving an easel painting but leads to misunderstandings on architectural projects. Therefore, allowances must be made for regular meetings and periodic review of progress, even though these methods add to the schedule and cost of the overall effort. Conflict does not signify failure to collaborate; it is an inevitable part of the give-and-take that often leads to a solution. The key is to create an appropriate forum so that discussion becomes



Fig. 12. Company Room D, detail of ceiling following completion of the project, 2012.

routine, and airing of different opinions can occur without rancor.

When competitive bids are desired or required, it is most fair if each bidder, not just a bidder who contributed to the design phase, is given the same privileged information. But when an owner is willing to accept a negotiated contract price instead of competitive bid process, collaboration with a contract conservator during the design phase — particularly one who has extensive experience working on very large architectural surfaces — may increase the probability that the general work can proceed as indicated by design-phase testing. In any case, whether to engage the contract conservator during the design phase or following a bid process should be discussed and evaluated early in the overall process. Whatever the final decision might be, all of these factors increase the importance of strong client/owner leadership to assure a healthy outcome.

At the Park Avenue Armory, the desire to treat the 1880 surfaces as fine artwork had to be tempered because the project was under tight budget and schedule constraints. However, the project still resulted in the successful realization of the design approach: exposure of

the 1880 finishes without over-painting (Fig. 12). The project required an open forum of ideas, techniques, and options at every stage. The synergy that developed among team members produced results that would have been hampered without a spirited exchange. The pilot project fulfilled its purpose, setting the stage for the treatment of the many other rooms and spaces in this National Historic Landmark.

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Project Team

Park Avenue Armory, client; Herzog & de Meuron, design architect; Platt Byard Dovell White, executive architect; Tishman Construction, construction manager; Building Conservation Associates, Inc., project conservator; Foreground Conservation & Decorative Arts in joint venture with EverGreene Architectural Arts, contract conservator.

Notes

1. The history of the Seventh Regiment Armory and its designers is described in detail in the National Register Nomination (National Register of Historic Places, Seventh Regiment Armory, New York, New York County, New York, #75001208) and the New York City Landmarks Preservation Commission, Designation Report, Seventh Regiment Armory, Number 3, LP-0417. New York City Landmarks Preservation Commission, June 9, 1967).
2. In consultation with BCA, restoration of the cabinets was carried out by R. Mark Adams and floor refinishing by Haywood Berk Floor Company, Inc.



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