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UNDER CONSTRUCTION: THE INSTALLATION OF LARGE SCALE EGYPTIAN RELIEFS AT THE WALTERS ART GALLERY

Lori Trusheim

Introduction

In 1998, the Walters Art Museum began a major renovation to one of its primary exhibition spaces, the Centre Street building. Constructed in 1974, this building consisted of three floors of gallery space that exhibited ancient through 19th century art, the conservation laboratories, curatorial offices, library, and an auditorium. The primary goal of the renovation was to upgrade the aging environmental systems in this section of the museum. As this work required major demolition, the museum took the opportunity to re-design the galleries, aiming to create more dynamic and informative exhibition spaces. The impact on staff was tremendous, not only due to the movement and storage of over 7,000 objects, but also because staff offices remained open on the upper floors while demolition proceeded on the floors directly below.

Part of the gallery de-installations included the removal of seven Egyptian granite architectural reliefs that were set into a gallery wall (Fig. 1). These reliefs originated from two temple sites in northern Egypt, Behbeit and Sammanud, dating from the 4th century BC. The curators and designers planned to display four of the reliefs in a temple gateway reconstruction. Although the reliefs originated from two different temple sites, it was decided to display the reliefs together for educational purposes, since both temples originated under the rule of Nectanebo II (30th dynasty pharaoh) and had stylistically similar carving.

This paper will describe the challenges faced by conservators beginning with the relief de-installation from the gallery wall, followed by their conservation treatment, and concluding with their mounting and reinstallation in the renovated galleries.

De-installation

The initial problem was twofold: to determine how these reliefs were mounted in the wall and to determine how they could be safely removed. During the installation in 1974, staff members were told that the blocks were supported only by a steel frame and that the reliefs could be pulled out of the wall, once a perimeter of decorative stucco was removed. From the initial 1998 examination, all that could be seen was that the stones protruded from the wall surface by ½ - 1”, however, there was little information regarding the thickness of each relief. In looking for actual records of the installation, a single blueprint was found in the museum records documenting that the non-load bearing wall in which the reliefs were mounted was built of cinder blocks filled with concrete. It also noted that stainless steel straps were used to anchor the thin reliefs, but there was no mention of a steel frame used to mount the reliefs.

Because of the discrepancy between what staff were told in 1974 vs. what the blueprint showed,
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it was even more critical to investigate how the reliefs were installed in the wall. Therefore, investigations were carried out by mechanically removing cement along the relief perimeter. Preliminary tests did not reveal any straps, and cement was consistently found in direct contact with the stone. It became apparent that no matter what method of extraction was used, cement would need to be mechanically removed from the perimeter of each stone edge to create a safety zone around each relief. Before cement removal was carried out, the relief edges were isolated using a barrier coat of 10% Paraloid B-72 in acetone (w/v) and then protected with 1/8" closed-cell polyethylene foam that was taped to the sealed stone edges. With invaluable help from volunteers and interns, cement was removed by hand, using stone-working chisels for better control. [1] Eventually, a few metal clips were found on the edges of some of the thinner stones, but these clips were just floating in the cement and were not anchored to any type of sub-structure. Excavating around the edges revealed that four reliefs were 1-3" thick, but the remaining three reliefs were greater than 3" thick. It became clear that the stones were physically locked into the walls by cement. This answered how the reliefs were installed – they were incorporated into the wall, like another cinder block, as the wall was being constructed. Unfortunately, the previous installation was built for permanence, not reversibility.

The next problem was how to safely remove the reliefs from the wall. Two methods were discussed: either the reliefs could be extracted or the entire wall could be taken down around the reliefs. During this early stage of the project it was essential to find colleagues with relevant experience. [2] The head mason at the National Cathedral in Washington, D.C. was consulted and helped identify a local stone working company that was willing to alter its standard operating methods to suit the needs of the project. [3] This company would also provide rigging of the reliefs, so that a third party contractor would not be necessary. This was a great advantage that streamlined the communication between conservators and masons. The weight of the cinder block wall above the reliefs combined with the configuration of the reliefs in the wall led to the decision to dismantle the wall around the objects, deinstalling the reliefs from the top down. Before demolition, the stone surfaces were covered with protective packages of a 1/8" polyethylene foam directly next to the stone, followed by Esterfoam (ester-type polyurethane, 2 lb./cu.ft.), Ethafoam (polyethylene, 2.2 lb./cu.ft.) and finally Masonite (Fig.2). These protective packages were taped to the sealed stone edges and strapped to the surrounding cinder block wall. A padded Masonite shelf was secured on the top edges to protect them from any falling debris. After four months of preparation, the wall was ready to be demolished.

Stonemasons used a combination of a diamond-blade saw and an electric-operated chisel, called a Hummingbird chipper, to fracture the mortar joints in between the cinder-blocks. Once the cement joins were disturbed, the cinder blocks were wiggled free and so the wall was dismantled, block by block (Fig. 3). The amount of vibration from electric tools was kept to the minimum possible to dislodge the cinder blocks. Despite sealing entrances and air ducts to and from the gallery, and keeping dry cutting with saws to a minimum, the amount of dust created was excessive and a factor that should be calculated into any similar projects.
The following procedure was used to remove all reliefs. Holes were drilled below the object to allow cotton slings to be strapped vertically around the stone. As the slings were connected to a chain hoist, the weight of the stone was transferred to a steel beam that was fastened to the top rails of the scaffolding. As the cinder blocks were removed around the objects, the reliefs were supported from the scaffolding and could eventually be hoisted down onto a wooden pallet (Fig. 3).

After months of preparations, the seven reliefs were lifted out of the walls in only five days. Following dust producing, labor intensive cement removal from back and sides using hand tools, the stones were moved into a closed gallery space, ready for conservation treatment.

Conservation Treatment

The primary aspects of conservation treatment involved: surface cleaning, fill removal, loss compensation and structural joining. Significant amounts of dirt and grime obscured the stone surfaces as well as a variety of old coatings. Close inspection identified coatings on both finished and damaged surfaces, indicating that the coatings were not original. Further evidence regarding the coating on one relief was found in an archival photo where a dealer’s wooden frame surrounded the stone perimeter. With the dealer’s frame now removed, a distinct border between the uncoated surface, protected by the frame and an inner dark coated surface could be seen along the top edge. Test cleanings confirmed that this distinct, non-original coating could be removed, in addition to surface dirt and grime. This particular relief was cleaned with an ammoniated water solution (pH 9), followed by a 1:1 mixture of ethanol: acetone (Fig. 4). Most of the remaining reliefs were cleaned with either distilled water or the ammoniated water solution. Dry cleaning tests were done using vinyl erasers in a mechanical pencil, but these proved ineffective at cleaning the textured surfaces of the stone.

Three reliefs contained old, discolored fills that visually obscured the surface. These painted plaster fills extended beyond the area of loss and over original surface. All of the old fill material was mechanically removed. The largest corner block had a pink and brown toned plaster fill in a horizontal band across the mid-section (Fig. 5). When this fill was removed, it was surprising to find a line of regular rectangular losses (2 ½" deep). These deep gouges were quarrying marks, most likely evidence for the re-use during Roman times of the valuable red granite from the collapsed temple site (Fig. 6). Leaving the quarrying marks unfilled would have provided a good example of historical evidence for the re-use of materials, yet due to the visual distraction to the carving and the installation setting, the decision was made to photograph the quarry marks and fill the losses with a reversible material. This decision was made jointly with the curator. An isolating layer of Paraloid B-72 was applied between the stone and fill material. The deep losses were filled with plaster of Paris and a top coat of Polyfilla, a commercial spackle compound. Shallow losses were filled with Polyfilla tinted with dry pigments. Fills were left slightly recessed and inpainted with Golden Fluid Acrylic Colors (Figs. 7, 8).
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The last conservation treatment issue involved structural joins on the largest corner block. The main structural problem was the failure of an old vertical join. This damage was observed prior to its deinstallation and each subsequent move caused the gap to widen. Two rods and a cement-like material on both sides of the break edge could be seen in the join. An additional fragment from the upper left corner of the same block was removed in 1951 for unknown reasons and needed to be reattached.

Prior to treatment, the corner block was lifted by gantry and placed onto a steel, L-shaped plate (Fig. 9). As part of the final mounting system, the steel plate was designed to accommodate movement by forklift. While the weight and shape of the corner block made it stable sitting on this plate, braces were attached from behind to further stabilize the block during treatment and movement (Fig. 10). The primary vertical join was treated first. Working with the museum's art handlers, the join was pulled apart by slightly lifting the smaller portion with a j-bar and sliding Teflon strips below the stone. Once friction was reduced by the Teflon strips, the stone fragments were pulled apart. The rods across the join were examined and found to be in stable condition and slated for re-use. Both broken edges were cleaned by mechanically removing the cement-like adhesive. While the alignment was significantly improved, there was still a ¼” gap across the join that could not be closed. After much consideration, it was decided to use a two-part epoxy to securely reattach the fragments into a single unit. The join was made as reversible as possible by coating the entire break edge and dowels with 30% Paraloid B-72 in acetone (w/v). The fragment was slipped into the closest possible alignment. Then, Araldite 2013 epoxy was injected into the join at a few, easily accessible spot locations. This epoxy system was chosen after discussion with the company's technical representative. It met the following criteria:

- it had the appropriate gap-filling properties
- the viscosity was spreadable without flowing on a vertical surface
- it gave off little heat when setting
- the working time was 1-2 hours
- it had an easy and controlled application (two-part epoxy sold in dual cartridge which can be placed into a dispensing gun, epoxy injected into mixing tube that ends in a fine tip applicator).

The second structural join, the attachment of the small corner fragment was done using the same method. The fragment and corresponding break edge had one dowel hole, which was re-used. The Araldite epoxy was used in spot locations to tack the fragment in place, instead of drilling for a second dowel. Final conservation included filling and inpainting the losses along the join.

Reinstallation

The final phase of this project was the reinstallation of the conserved granite reliefs. A gateway structure to support the reliefs was designed by a structural engineer, under consultation with
conservator, designer and installer. The mounting provided a challenge as the design required an “invisible” mounting system, yet the conservators did not want to drill any new holes in the stone to mount the reliefs. A solution was developed working with Sanders Museum Services [4]. The mounting approaches had to be flexible in order to adapt to the wide range of sizes from the thin, flat relief above the doorway to the massive corner blocks on either side of the entrance. The mounts were designed to meet the individual needs of each relief and to safely and efficiently fit into the steel framework of the reconstructed temple gateway.

Sanders Museum Services provided consultation, design, manufacture of the mounts and the rigging to install the objects into the gateway structure. A basic procedure for installation was to secure the object into the mount and to raise the object by forklift into the gateway (Fig. 11). Once positioned, the mount was bolted to the steel framework. Basically, the gateway structure held the mount and the mount held the object; gravity is the primary action holding the thick corner blocks in place. Braces then were added to mechanically lock the objects in place for added security (Fig. 12).

The relief fragment above the gateway posed different challenges because of its long yet thin size. It measures 2 ¾” thick, but is 60” wide with the reverse surface sawed flat. Unlike the massive corner blocks, this relief was essentially too long and thin to support it’s own weight, even though it is granite. This relief has a repaired break, which runs horizontally across the upper section. It therefore required an auxiliary support. A steel frame was made with a shelf on the bottom to support the relief and an aluminum grid on the back to spread out the weight and give the object support during installation. Padded, steel clips were used to secure the object in the mount. As before, after positioning the relief, the mount was bolted to the framework in the gateway.

The exhibitions department coordinated the final cosmetic work to conceal the steel structure and mounting hardware. Carpenters began finishing work around the objects, and at all times the relief surfaces were protected with polyethylene foam. Conservators supervised the final finishing whenever the contractors were in close proximity to the artwork. The designer chose a textured, neutral background color so that the red or gray granite reliefs remained distinct from the gateway (Fig. 13).

Conclusions

As the Walters’ renovation spanned over three years, the important common threads to this project were planning, flexibility and co-ordination. In the Egyptian relief deinstallation phase, investigations produced information, which in turn formed a decision on how to proceed. The actual conservation treatment was a very time consuming part of this project, but every detail could not be included in the scope of this paper. An overview of the general approaches was given and it should be noted that the treatment decisions, especially related to loss compensation, were made in regards to the reliefs context within a fine arts museum. The main principle
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guiding the relief reinstallation was a non-invasive, reversible, mounting system. While other paths could have been followed throughout the course of this project, the choices made here resulted in the safe reinstallation of the Egyptian temple reliefs.

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Endnotes

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2. The author is grateful to Ellen Pearlstein, Laura D’Allessandro, Arthur Beale and George Hagerty who generously shared their knowledge.


4. Sanders Museum Services (Bradley Sanders, Owner), Rt. 2, Box 794, Shepherdstown, W. Va., 25443.

Materials

Araldite 2013
   Polymer Tooling Systems, 303 Commerce Drive, Exton, PA 19341, (610) 363-5440

Ethafoam and Esterfoam
   Advanced Packaging, 4818 Seton Drive, Baltimore, MD 21215, (410) 358-9444

Golden Fluid Acrylic Colors
   Golden Artist Colors, Inc., New Berlin, NY 13411, available at most art supply stores

Masonite
   available at most lumber yards
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Paraloid B-72
Conservation Resources International, LLC., 8000-H Forbes Place, Springfield, Virginia 22151, (800) 634-6932

French's Diamond Lab Plaster

Polyethylene Foam (Nalgene)
Fisher Scientific, (800) 766-7000

Polyfillsa
Polycell Products Ltd., ICI Decorative Products, Wexham Road, Slough. SL2 5DS UK 01753 550555, available at hardware stores in UK

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Figure 1. View of Egyptian Gallery in Centre St. Building, prior to renovation. Seven granite architectural reliefs are set into the wall in the background.
Figure 2. Side view of protective package covering the surface of the corner block (WAM 22.5). Cement mechanically removed from perimeter. Stone edge is isolated with Paraloid B-72. Relief protected with polyethylene foam next to the stone surface, followed by grey Esterfoam, white Ethafoam and a final outer layer of Masonite. The entire package is taped and strapped to the surrounding wall (straps not in contact with edge of stone).

Figure 3. Stone mason fracturing the mortar joint to dislodge the cinder block. The weight of the upper relief (to the left of the mason) is transferred to the steel beam above. The relief is strapped with cotton slings attached to a chain hoist, which is connected to the steel beam.
Figure 4. Egyptian relief (WAM 22.200) during treatment: surface cleaning and removal of dark coating.
Figure 5. Egyptian corner block (WAM 22.5) before treatment, with old discolored fills.

Figure 6. Egyptian corner block (WAM 22.5) during treatment. The previous fill has been removed, revealing quarrying marks.
Figure 7. Egyptian corner block (WAM 22.5) during treatment, with losses refilled.

Figure 8. Egyptian corner block (WAM 22.5) after treatment, with fills inpainted.
Figure 9. Egyptian corner block (WAM 22.5) sitting on L-shaped steel plate as part of the final mount. Bradley Sanders is taking measurements for mounting and reinstallation. There are two structural problems on this block: the failure of the old vertical join, and a small fragment (not shown) which needs to be attached to the upper left corner.

Figure 10. Back view of Egyptian corner block (WAM 22.5), showing braces attached from behind to stabilize block during treatment and movement.
Figure 12. Four Egyptian reliefs (WAM 22.5, 22.8, 22.176, 22.200) secured into their mounts, which are bolted to the steel gateway structure.

Figure 11. Egyptian relief (WAM 22.200) being raised by forklift into the steel gateway structure. The relief is secured in its mount and sandwiched between padded blankets and Masonite.
Figure 13. View of completed installation of four Egyptian reliefs (WAM 22.5, 22.176, 22.200) with the mounts and steel structure concealed.