Conservation Report

Object Number:	34.146	Collection: AA
Artist/Maker:	Digambara Sect	
Title, Date:	Image of the Jina Rishabha, 9th century	
Media:	Bronze.	
Signature/Markings:	The accession number is painted in red acrylic on the back side of the rectangular pedestal, with 10% B72 in ethanol barrier layers.	
Dimensions:	overall: 9 1/4 × 4 1/2 × 2 3/4 in. (23.5 × 11.4 × 7 cm)	

Examination & Treatment

Survey Date: **31-Mar-2016**

Examiner(s): **Kasey Hamilton**
Erin Anderson

Project: Asian and Islamic Reinstallation

Overall Condition: Fair

Overall Condition Analysis:

The object is a cast, copper alloy sculpture of a Jina, seated in padmasana on a lotus pedestal that sits atop a rectangular pedestal with six short legs. The Jina is nude, and his hands rest in his lap in the yoga mudra. The Jina is flanked by four smaller figures on either side, and positioned in front of a foliated screen (torana). There is a three-tiered canopy (chattra) above the Jina's head.

On either side of the Jina at shoulder level, there are two standing figures. These standing figures are positioned in tribhanga pose, with the hips thrust out to one side and the head and shoulders tilted in the opposite direction. These figures hold flywhisks and are adorned with crowns and jewelry. The other six figures in the composition are seated in padmasana. Two much smaller standing figures are present beneath the Jina, in front of two of the short legs supporting the pedestal. These figures have been tentatively identified as Dharanenda and Padmavati in the TMS description.

All of the figures in the composition have a combination of incised and modelled facial features. Incised lines are used to decorate elements of the torana, as well as the lotus pedestal and base that the Jina sits on. Details are finished on the front side of the sculpture, but the backside of the piece is unfinished. The back side shows evidence of tool marks, as well as the rough form of the wax from the initial sculpting. The metal is a dark green color, and matte in appearance.

No previous treatment reports were found. Two collections surveys were found, one from 2004, and the other from 1997.

The object is overall in fair condition. There is a loss measuring 1 ¼" to the bottom edge of the base, between the front proper right (PR) foot of the pedestal and the figures at the center. The back two feet of the pedestal are deformed and bent inward towards the front of the object.

The back proper left (PL) foot of the pedestal appears to be a replacement, as it is visually dissimilar from both the style and material of the other feet. It is fashioned from a sheet of smooth, dark metal, and there is a large amount of yellowed, bubbly adhesive that appears to be adjoining the sheet metal to the underside of the base. XRF analysis confirms that the composition of the back PL foot is not copper alloy, but instead zinc (with minor peaks indicating the presence of iron and lead – see Documentation/Testing). The replacement leg moves slightly with pressure, and under magnification it is clear that the adhesive is lifting in a number of places along the edges.

A few small cracks are present in the back PR leg of the base. These cracks appear to be the result of the deformation, but they are not mobile and appear stable at this time.

There are various small accretions present within the recesses of the object. These accretions are a variety of colors, including white, brown, green, black, and orange. Many of these accretions were examined under magnification, and most were found to be loosely bound to the substrate. The green accretion existing within the recessed line at the topmost element of the foliated screen is somewhat loose and powdery. This accretion tested negatively for chlorides, indicating no bronze disease. See documentation/testing section for further details.

The white and beige accretions throughout are crumbly and easily broken up. Some of the brightest white accretions are present on the reverse of the object, along the bottom edge of the rectangular pedestal (below the accession number). These accretions appear waxy under magnification. The accretions present on the underside of the pedestal appear layered – many of the light green/grey accretions have an underlying black, powdery layer underneath. There are areas with large amounts of a grey, crusty material on the underside of the object; this appears to be remaining core material from manufacture.

There are some light scratches, scuffs, and abrasions throughout. The surface of the bronze is matte and pitted throughout.

The accession number is painted in red on the back of the base with no barrier layer, and will be removed and reapplied during treatment to include a barrier layer.

Documentation/Testing:

X-Ray Fluorescence Spectroscopy (XRF):
XRF, a nondestructive elemental analytical technique, was carried out to examine the elemental composition of the materials present. Readings were taken with a Bruker-Tracer III-V+ instrument with a rhodium source, beryllium sample window roughly 3mm x 4mm in size, and a Si-Pin detector. Settings are 40 kV 1-5 mA 30sec, unless otherwise noted. Spectral data were acquired and interpreted using S1pXRF and Artax software.

XRF analysis of the base metal shows peaks for copper, lead, and tin, indicating the metal is bronze (not brass, as previously noted in the TMS description – the medium has since been corrected). Analysis of the replacement leg shows major peaks for zinc and iron and a minor peak for lead.
A PDF summary of these findings with associated spectra was prepared for upload to TMS.

UV:
The adhesive around the replacement leg fluoresces yellow under ultraviolet light.

Microchemical Spot Tests:
A microchemical spot test for chlorides was conducted following the protocol outlined in Odegaard et al (2015). The presence of chlorides can be evidence of bronze disease. The test involves the dissolution and acidification of chloride ions (if present) in a solution of nitric acid. Silver nitrate is added to the solution and if chlorides are present, a white silver chloride precipitate will form.

A small sample of the green, powdery accretion existing in the topmost element of the foliated screen was removed with a scalpel and placed into the well of a test plate. This sample tested negative for chlorides.

Odegaard, Nancy, Carroll, Scott, and Zimmt, Werner S. 2015. Material Characterization Tests For Objects of Art and Archaeology. Archetype Pubns.

Brief Description:

Cleaning and loss compensation

Proposed Treatment:

1. Surface clean to remove grime and white accretions as possible.
2. Remove restoration foot and associated adhesive.
3. Create new restoration foot using a bulked epoxy, reattach and inpaint.
4. Remove and reapply accession number.

Treatment:

1. The surface was cleaned using water, acetone, and ethanol.

2. The yellowed adhesive adhering the restoration foot to the sculpture was found to be soluble in acetone. The adhesive was softened with cotton swabs dampened with acetone, and removed mechanically with a scalpel. As the adhesive was removed, the restoration foot became more mobile, and was eventually able to be removed completely.

Adhesive residues ingrained into the powdery core material on the underside of the base were removed, as possible, via a cotton poultice dampened with acetone.

3. Molds of the PR front and back legs were taken using 3M ESPE - Express STD, a quick-setting vinyl polysiloxane putty. The surface of the object was covered with Parafilm M during mold-making to protect the surface from any residues.

West System epoxy was selected for casting the replacement leg. The resin and hardener were mixed in a disposable cup, and glass microballoons were added until the epoxy was the constancy of a putty. The epoxy was then toned with dry pigments to roughly match the color of the rest of the sculpture.

The bulked epoxy was cast in each mold. After curing, one cast replacement leg was selected as having the best shape and fit.

A second bulked epoxy piece was created to cup underneath the pedestal, providing support along the attachment point. This area of the pedestal was wrapped in Parafilm M, and the same bulked epoxy was pressed into the base beneath the missing leg. Before curing, the replacement leg was positioned in place within the additional epoxy so that the two fills became one piece after curing

The entire bulked epoxy fill was adhered to the underside of the pedestal and surrounding joining areas using 40% Paraloid B48-N in acetone (copolymer of methacrylate methyl methacrylate and butyl acrylate). This adhesive was selected for its good adhesion with metals.

The replacement leg was carved and sanded down to match the surrounding shape of the sculpture.

Golden Acrylics were used to inpaint the fill to match the surrounding surface.

4. The previous accession number was removed with acetone. A new number was applied on the back PR side of the pedestal, using red acrylic paint and 10% Paraloid B-72 in ethanol barrier layers (an acrylic resin composed of ethyl methacrylate (70%) and methyl acrylate (30%) copolymer).

Photo Documentation: Digital photographs of 6 views before treatment and 8 views after treatment.

Examination & Treatment

Overall Condition: See Conservation Report on File

Examination & Treatment

Overall Condition: Scanned Archival Record
