
The Multipurpose Mount

An Adjustable Support for Photography and Radiography

Introduction

In early 2011, a rare collection of ancient Dinetah pottery was brought to the Conservation Unit of the New Mexico Department of Cultural Affairs by the U.S. Bureau of Land Management and the New Mexico Office of Archaeological Services for assistance in preservation and analysis. For the documentation of the 50+ pieces, photography and x-ray analysis were planned to study their construction and repairs. The challenge was presented to the Exhibits Preparation crew to provide a mount that would safely stabilize and support the pointed-bottomed vessels while remaining unobtrusive during photography and radiography.

Design

The design of any sort of object mount must begin with an assessment of the object and the desired use parameters. In this instance, one mount was to be the support for each of the objects in the collection during the analysis. Since this mount was intended for use during closely attended and controlled situations of limited duration, it did not need to have an unshakeable hold on the object. In addition, the mount needed to be readily adjustable to accommodate the wide range of pot sizes and shapes in the least possible time.

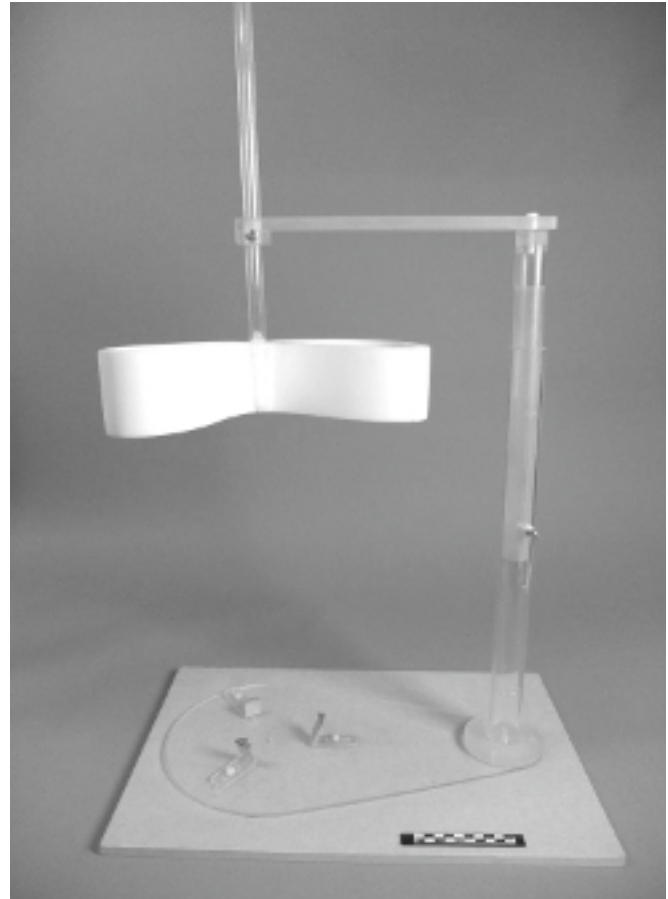
The pots ranged in size from less than 12" (30cm) tall and 6" (15cm) in diameter to greater than 20" (50cm) tall and 10" (25cm) in diameter. The mouth openings ranged from 4" (10cm) to 8" (20cm). The structure of the pots varied in their level of integrity, with repairs both ancient and modern of disparate levels of quality. The surfaces of the pots were often friable, with unstable deposits of carbon, soil, and conifer resins.

The parameters of use were determined for each process. For the photography of the pieces, the mount should hold the objects from a distance sufficient to be easily cropped from the photos. In addition, the portions of the mount that would be in contact with the object should be as hidden or unobtrusive as possible. The mount also needed to be a free-standing unit that could be placed on a turntable to allow the photographing of multiple views without further handling of the object. The proposed X-ray analysis also required that the materials used for the mount had a low radiographic signature.

To meet these core criteria, the decision was made to construct the mount of clear acrylic tubing, rod, and sheet with nylon fasteners used to join the components together. All contact surfaces to the objects were to be padded with a low nap sueded polyethylene fabric such as Ultrasuede® or with a fused surface polyethylene foam such as Volara®.

The mount was constructed of a base made of ¼" (6mm) clear acrylic plastic flat sheet approximately 18" (45cm) long by 10" (25cm) wide. A major support column was fabricated of 1 ½" (38mm) x 19" (48cm) acrylic tube, with a 1 ¼" (32mm) tube telescoped into the first. The outer tube was

cemented to a lathe-turned acrylic foot that was mechanically fastened to the flat base. A slot was milled through the wall of the outer tube and a corresponding hole drilled and tapped into the inner tube to receive a ¼-20 (6x1.0) bolt, thus allowing the length of the telescoping column assembly to be easily adjusted and set.



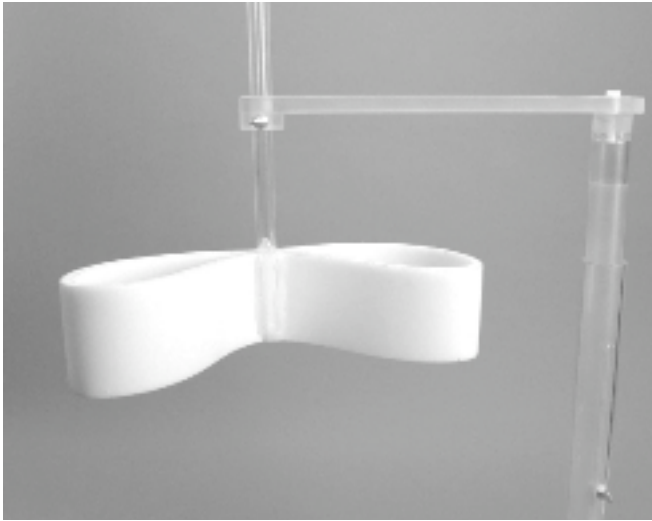
A horizontal arm of flat acrylic was bolted to the top of the column and extended over the position where the pot would be held. A ½" (12mm) acrylic rod was led vertically through a hole milled into the arm and a reinforcing block. An adjusting bolt in the reinforcing block allowed the rod assembly to be easily raised and lowered into the body of the pot.

In the original configuration of the mount, a 4" (10cm) diameter x ¼" (6mm) acrylic disk was attached to the end of the vertical rod to fit into the neck of the pot and define its position. It was quickly found that a single size interface could not accommodate the range of sizes and shapes of the mouths of the pots.

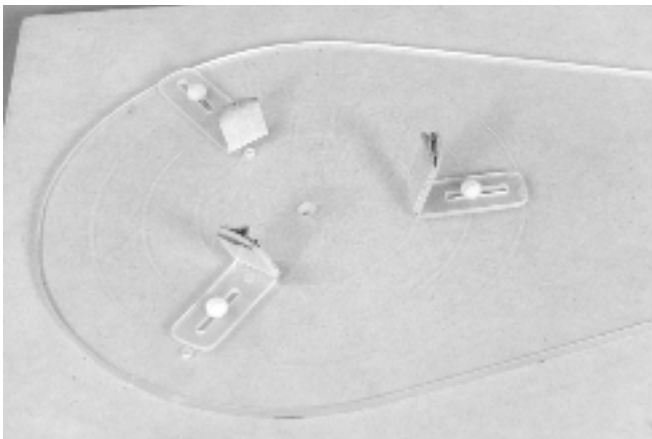
The solution was to fabricate a flexible figure-8 out of ¼" (6mm) Volara foam and attach that to the end of the vertical member with Hot-melt adhesive. The resulting structure could be easily compressed and lowered into the mouth of the pot where it expanded and gently supported the pot.

of Ancient Dinetah Pottery

by Jamie Hascall



The platform was equipped with multiple concentric rings of tapped holes for machine screws to secure three acrylic stops that stabilize the lower end of the pot. They allowed the pot to be positioned on the base and the stops moved in to set the location and give support to the pot.



In some instances, it was found that the stops gave sufficient stability to the pot that there was no need to use the upper support, thus allowing for photographs with no visual intrusion into the pot mount.

The Mount in Use

After the mount was designed and built, it was handed over to the researchers and photographers. This usage by persons other than the builder showed the strengths and weaknesses of the design.

The overall function and adjustability proved to be intuitive and straightforward. Securing the object into the mount was easy to do and came off without a hitch. The few problems that did crop up mostly arose from the choice of materials and specific solutions to physical relationships in building the mount.



Because of the relatively thin dimension of the tubing walls, the nylon fasteners chosen for adjusting the height of the main column quickly degraded due to the pressure on the few threads that were in use when tightened. These were replaced with steel fasteners for durability and the nylon fasteners would only be used during x-ray analysis.

It was found that the angle of the adjustable stops that position the bottom of the pot did not always match the angle of the pots. When the photographers worked with the pot, they would occasionally rotate the pot within the acrylic stops to get a more favorable photograph. Even though these stops were padded with Ultrasuede, there would occasionally be a small amount of abrasion damage to the surface of the pot. The plan is for the next iteration of the mount to have a jointed or rounded contact surface on each stop, as well as including a thicker padding such as Volara foam.

Conclusion

Building a single mechanism to serve multiple purposes is always an exercise in compromise. This design satisfied the defined purposes reasonably well while having a high degree of usability with limited specific training to the users. If an additional example of this mount would be made, the knowledge gleaned from the usage that this one received would improve the usability and durability of the new version.