excavation, artifacts in association were photographed in situ and upon removal, and a final record photograph was made of the fully exposed burial. These sequence photos, with sequential recordings on tape of locations, inferences, and other data provided a clear and precise record of the data recovered. Save for a roughly sketched site map, prepared at the start of salvage operations, no other written records were kept in the field. Nonetheless, a detailed site map (Fig. 1) has been prepared in the laboratory, a report is being written, and no material was unplaceable in terms of location or association.

Several unique features of 4-Mer-66 deserve mention because they affected the way in which the method outlined above operated. Most of these effects were favorable, and they can be divided into two categories: those related to the geography of the site itself, and those related to the functioning of the archaeologists.

Because the site was virtually contained within an intersection, delimiting the area of investigation was much easier than would often be the case. The streets involved were oriented roughly E-W and N-S, thus providing ready direction references; curbs were not to be disturbed by the actions of the machinery and thus provided solid base lines for datum stakes as well as material repositories while the work was in progress.

A crew of five archaeologists on the first day, and of four the second day, was sufficient to handle the excavation and recording at 4-Mer-66. Given a larger site, and/or a different arrangement of cultural materials, however, this small crew could allow much data to slip by unnoticed. The method must, therefore, be suited to the circumstances as well as to the kind of data sought. A crew of four is considered the absolute minimum; in a larger site, an increase in personnel is desirable.

The construction firm involved in the excavation of 4-Mer-66 was quite cooperative; this is not always the case. The overburden covering the pit containing Burials 1 and 2 was removed for us, and we were allowed to work undisturbed in this area for an hour while cuts were being made in a different section of the intersection. Of course, if construction personnel are approached in a suitably tactful manner, the chances of their being helpful are increased, and public relations are improved both for the archaeologist and the firm itself.

CONCLUSION

Audio-visual aids have proven to be useful in archaeological salvage operations, and they may provide the means to effect salvage of sites hitherto thought to be lost because of time or personnel limitations. Much as the computer has revolutionized archaeological interpretation by handling statistics and leaving the archaeologist free to ruminate about hypotheses and reconstructions, so the camera and the tape recorder can, in some instances, revolutionize the data-gathering procedure itself.

For sites which are not in immediate danger, traditional recording methods using printed forms are adequate and sufficient; filling out a printed form gives one the time to think, to interpret, and to compare before putting data down on paper. When time in the field is at a premium, however, the audio-visual method outlined herein is a fast, easy, and efficient means of gathering data. It requires proportionately more time in the laboratory, since the developing of film, collating of prints, and transcribing of tapes cannot be done quickly; but the time it saves in the field is often the primary consideration in salvage emergencies, and for such situations it is highly useful.

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TECHNIQUES OF MAKING PLASTIC
CASTS OF ARTIFACTS
FROM PERMANENT MOLDS

John R. Rohner

Abstract

A method for making duplicates of projectile points or other ethnic artifacts is presented. A two-piece mold of RTV silicone rubber is made over the object. Cold-cure acrylic, colored with dry pigment, is incorporated in the mold to produce a replica of the original artifact, in both color and texture.
WITH hundreds of new museums being founded each year and an ever-increasing demand for the loan and exchange of artifacts for teaching and research, it follows that facsimile reproductions must, of necessity, offset the limited supply of actual specimens.

As a curator, I strongly believe in displaying the "original"; however, with the rising incidence of thefts from museum displays, we are obliged to reconsider the practicality of displaying forgery for the sake of protecting rare, original, specimens.

To those who frown on copying artifacts, I ask, "How many people familiar with the Mona Lisa have seen the original?"

Facsimile reproduction solves several problems. A copy of a rare or unusually valuable specimen may be exhibited in place of the original, thus protecting the latter from loss. The ethical problem of exhibiting a reproduction may be solved by frankly labeling it as such, and most of the viewing public could be made to understand that the significance of an object does not reside in its monetary value, but in its power to inform.

Not uncommonly the term "fakery" is applied to such a practice, but, since there is no intent to deceive, this term does not apply. A museum having no access to an original would benefit by the privilege of exhibiting an accurate copy. Copies of priceless pieces can be loaned or exchanged freely. Moreover, the possession of an accurate facsimile assures the identification of a lost or stolen original.

A technique of reproducing artifacts in acrylic was first published by the author in Museum Graphic, Summer 1958. However, the mold was made from dental stone, required a separator for casting, and was limited to five or six casts. The molding material described in this

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**Fig. 1 [ROHNER].** Projectile point being placed on wax platform.

**Fig. 2 [ROHNER].** Point waxed down to Celotex base with nails in place.

**Fig. 3 [ROHNER].** Paper dam being waxed down.

**Fig. 4 [ROHNER].** Air hose being used to eliminate bubbles from RTV.
article is of a permanent nature and renders microscopic detail. Let us now discuss a reconstruction of an Early Man point.

Method of Making a Permanent Mold
1. Clean all dirt and grease from the artifact.
2. Cut a piece of 1/2-in. Celotex upon which to mount the point.
3. Stick the artifact down to the Celotex with hot bee's wax. Then, following the edge of the artifact, wax the underside straight down to the Celotex (Fig. 1).
4. Drive four #6d finished nails vertically into the Celotex 1/2 in. from the artifact (Fig. 2).
5. Cut a strip of paper and encircle the artifact beyond the nails by 1/2 in. Fasten down by brushing with hot bee’s wax (Fig. 3).
6. Mix enough Dow Corning RTV Silicone rubber #589 to cover the artifact at least 3/4 in.
7. Pour a small amount of RTV over the artifact, and with low pressure from an air hose drive the material over the artifact to eliminate air pockets (Fig. 4). Add more silicone and repeat with the air hose. Then add remaining RTV and vibrate to work bubbles to the surface.
8. When the RTV has set (one to two days), pull the nails from the mold, remove the artifact, and take off the paper ring.
9. Cut keys (notches) in the edge of the mold with a scalpel (see Fig. 6).
10. Clean wax from the artifact.
11. Brush separator (10 parts paraffin dissolved in 90 parts xylene by weight) over the entire mold excluding the base.
12. Insert nails into mold, and leave at least 1 in. exposed above the surface of the mold.
13. Fit a new paper ring, twice the height of the original, around the mold and fasten down at the base with hot bee’s wax.
14. Place the artifact back into the mold in its exact position.
15. Mix sufficient RTV to make second half of mold.
16. Hold the artifact in position with a pointed wooden dowel, and apply RTV as for first half of mold (Fig. 5), but do not vibrate as it may cause the artifact to shift and permit RTV to flow beneath it. Gently remove dowel, and allow mold to cure.
17. When second half has set, remove the nails, paper dam, and work the halves of the mold apart, and remove artifact.
18. Cut troughs in each side of the mold to act as reservoirs for excess plastic when the cast is made (Fig. 6).

Making the Cast
Clear, cold-cure acrylic plastic called Duzall is the material used for casting as it renders a fine reproduction and cures in a relatively short time (30 to 60 minutes). It comes in powder form, either clear or white, with sufficient liquid for mixing. Clear is the most useful as it can be used successfully with dry pigment to imitate opaque as well as transparent materials. By adding more pigment, any color density can be obtained. For base colors, dry pigment and Duzall powder should be thoroughly mixed with mortar and pestle. Small amounts can be checked for color by adding a drop of liquid catalyst. When the proper base color is attained, it is added to an equal amount of liquid by volume, stirred for about two minutes, and poured into each half of the mold (Fig. 7). The mixture should not be too thick when poured. A little experimenting will give the desired results.

When the plastic has thickened (this depends upon the size and thickness of the artifact, so it must be experi-
mented with), notice whether the plastic protrudes above the surface of the mold. For proper results there must be an excess of plastic in the mold when the two halves are fitted together. If the plastic has shrunk, add more from the original mixture. Brush liquid catalyst on each exposed plastic surface, and put the two halves together. Drive the nails gently into celotex to force the mold together. Another method of forcing the mold together is to cut the nails shorter than the thickness of the mold and evenly weight down the top of the mold.

When the cast is removed from the mold, it will have a thin flashing of plastic around it. The cast should then be put into boiling water for a few minutes. This makes the marginal flashing brittle and permits it to break cleanly from the cast when thumbnail pressure is applied.

If one wishes to reproduce the original color markings of a variegated point, the following procedure is used.

Prepare an acrylic color vehicle by mixing 1 part powder to 19 parts liquid by measure, and shake for about 15 minutes or until clear. The method of handling pigment in relation to the painting vehicle determines whether the resulting surface is flat or glossy.

Dry pigment dissolved thoroughly in the clear vehicle and allowed to stand overnight produces a glossy painting medium. If the acrylic vehicle is mixed with a brush and dry pigment and applied immediately, it renders a flat finish.

If a multicolored glossy point is desired, paint a thin coat of the clear vehicle on each half of the mold. Do not permit it to puddle. After the coat has dried (this generally takes several minutes), apply another coat. Continue the process until three layers have been applied. This forms a surface upon which the color pattern of the original is painted.

If a nonglossy varicolored point is desired, the halves of the mold are painted using the nonglossy technique. In the case of both glossy and nonglossy artifacts, rock granules, mica, flaked cured acrylic, etc., can be used for coloring. When the mold has been properly painted, the base colored mixture is poured in the manner originally described, and the cast is finished as described above.

Permanent Pigments and Alphacolor are the trade names of the dry color used; they are available through art supply houses. Duzall is available through Coralite Dental Products Company, 531 South Plymouth Court, Chicago, Illinois.

Because acrylic fumes may be harmful, it is advisable to use an exhaust fan or good ventilation.

University of Colorado Museum
Boulder, Colorado
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AN ARTIFACT CLEANING TECHNIQUE
Stanley Rhine

ABSTRACT

Dental hygiene devices can be used to clean artifacts. Dirt and debris can quickly, easily, and safely be flushed from very delicate materials.