CRL Report 2: Composite wood / iron objects: pole arms and partisans

La Salle Shipwreck Project
Texas Historical Commission

Throughout each year, the Conservation Research Laboratory conserves material from a number of different archaeological projects. The purpose of these CRL reports is to showcase the conservation procedures used to treat some of the more interesting archaeological material. The conservation of a partisan found on the *Belle* is presented in this report. The *Belle*, one of the ships of French explorer Robert Cavelier, Sieur (Lord) de La Salle, was lost in Matagorda Bay, Texas in 1686. It was excavated by the Texas Historical Commission.

During any shipwreck conservation project, and the *Belle* is no exception, there are always artifacts classified as composite artifacts because they are comprised of disparate materials that cannot be disassembled or broken down into their component parts. A number of pole arms found on the *Belle* fall into this category as they all have iron blades attached to long wooden shafts.

Definition of Terms

A 'pole arm' is an all-inclusive word for any metal pointed shaft used for military and/or status purposes. There is considerable confusion and overlapping of definitions for the numerous 15th- through 18th-century wooden shafts with metal pointed ends. They are referred to as pikes, spontoons, partisans, and halberds to name but a few.

The encrusted object to the left was recovered from the *Belle*. It can be identified as a partisan, which is defined either as "a weapon used by infantry in the 16th to 17th centuries, consisting of a long-handled spear, the blade having one or more lateral cutting projections" (Oxford Universal Dictionary of Historical Principles 1955) or as "a broad-bladed pole arm usually having short, curved branches at the base of the blade; but the shapes of the blades vary greatly" (Stone 1961:484).

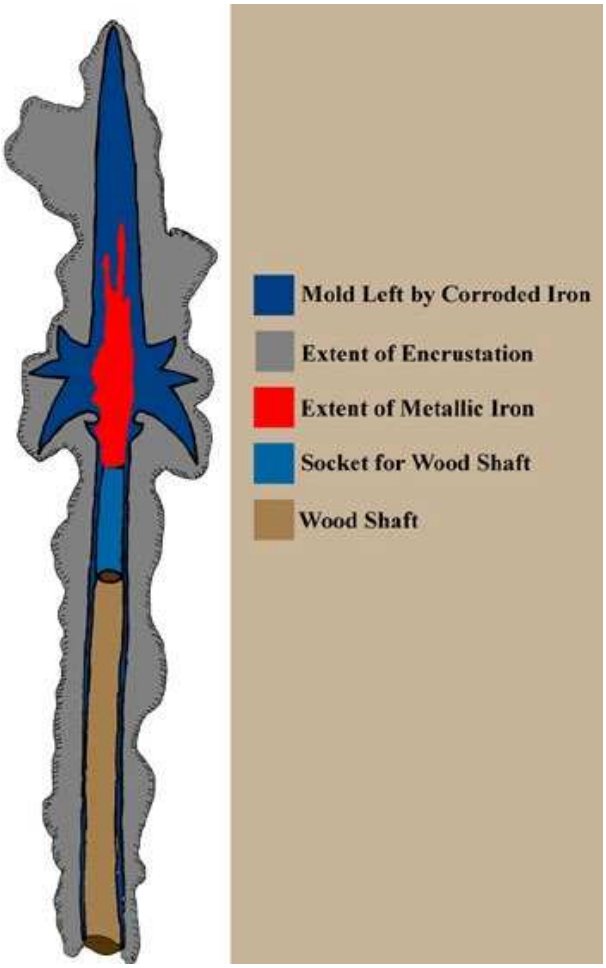
A partisan, Stone (1961:484) continues, is "particularly the weapon of the guards of dignitaries and many specimens are elaborately decorated. It was used throughout the 16th and 17th centuries and still is used as a ceremonial weapon."

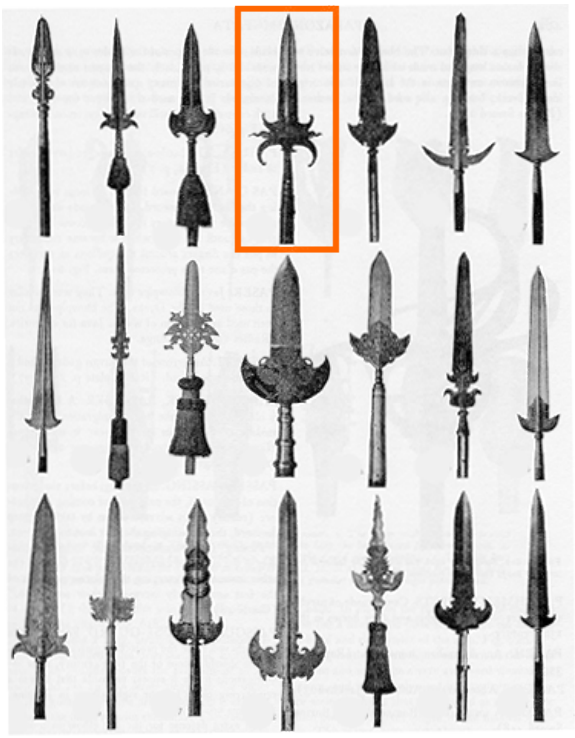
The encrusted pole arm/partisan shown above is an excellent example of an iron/wood composite artifact. It is presented here as an interesting example of the role that casting in epoxy plays in modern conservation. Casting is of particular importance in the conservation of the *Belle*'s iron artifacts, for only a natural mold formed by the encrustation is all that remains of a significant percentage of them -- especially the smaller objects. It is important to remember that when a metal object is lost in the sea, a layer of encrustation begins to form immediately on its surfaces. This encrustation creates a perfect impression (in many instances) and mold of the original metal object.

In order to properly evaluate the encrusted pole arm, it was necessary to first obtain a good set of radiographs. Where sound metal remains on an encrusted artifact, it shows as a white area on a radiograph, for X rays do not readily penetrate through metal and thus only slightly expose the X-ray film. Areas where metal is completely corroded are indicated by a gray shadow.

In the case of the *Belle* pole arm, we could determine from the radiograph (illustrated at right) that some metallic iron remained in the thick, center part of the blade. However, no metal remained along the blade's thin cutting edges. In short, all that remained of the blade was a hollow mold filled with loose slush. We decided then to make a cast of the blade from the impression it had left in the encrustation.

The figure to the right was drawn from X rays of the encrusted object. It can be classed as a partisan, since it is very similar to the example highlighted in the figure below.





The highlighted partisan (left) is a 17th-century French piece. The other examples show the range of variations found within this interesting partisan class of polearms. Elaborate etched designs are evident on some of these examples.

Source: Stone 1961:483.

CONSERVATION OF AN IRON BLADE

Radiographs (right) of encrusted metal artifacts, such as the partisan (below), can reveal where sound metal remains, as well as show areas of metal that have since corroded. It is sometimes difficult, however, to determine from the X rays if the corrosion products are solid or if they are merely loose slush. To find out, the conservator has no choice but to break open the encrustation. If all that remains is loose slush and a natural mold of the artifact, the mold can be easily cast in epoxy. If the corrosion products are solid, a different tactic must be used.

When the encrusted partisan (above) was broken in half, we realized that the corrosion products were, in fact, solid. Our original plan of casting the entire piece had to be slightly modified.

After the broken encrustation was fitted back together, it was pressed into a box containing plaster-of-Paris (below left). The plaster supported the back half of the encrusted piece, while the conservator slowly removed the encrusted top half. The conservator used an S.S. White Airbrasie unit to cut through the encrustation (below right). The precision of this tool ensured that the thin cutting edge of the partisan blade would not be inadvertently destroyed.

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After cutting off the top surface of the encrustation, all of the metal corrosion layers were removed. Special care was taken to clean the sharp edges of the blade. Hysol LE-6329 NA epoxy (no longer available) was poured into the open areas, making sure it flowed along the edges. The different pieces of the top encrustation were then placed on top of the epoxy, so that it would pick up the natural surface of the original blade surface.

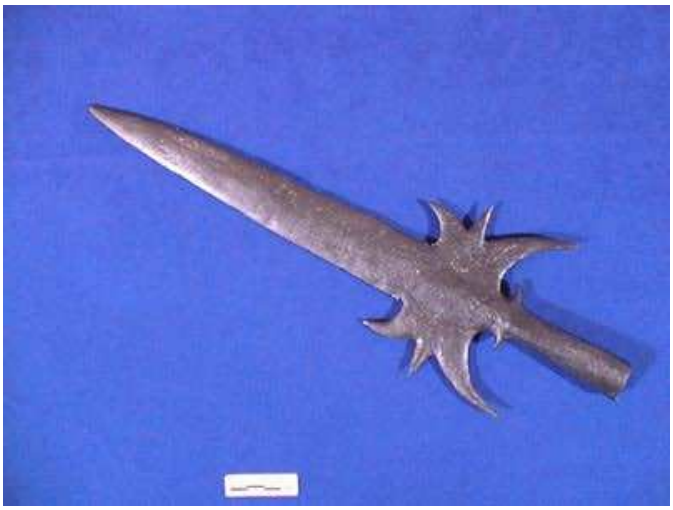
Part epoxy/part metal partisan removed from the encrustation

Silicone rubber mold made of part metal/part epoxy partisan

Part metal/metal oxide and part expoxy partisan as removed from the encrustation after filling voids with epoxy

Silicone rubber mold cast with Hysol LE 6329 NA epoxy

After the epoxy set, the cast was removed and covered with a coating of graphite to give it a metallic appearance (right). There is additional work to be done on the metal straps that project from the partisan, connecting it to the shaft.



CONSERVATION OF A WOOD SHAFT

Throughout the conservation process, the wood shaft part of the partisan had been kept wet by wrapping it in damp rags. It was conserved only after the blade was cast. The encrustation around the wood was carefully removed using a mechanical air scribe. Silicone oil was used to treat the wood in this instance, although acetone-rosin would have been just as appropriate. Both are very good when the wood to be preserved is broken in several pieces and has to be repaired. PEG was not appropriate as conservation treatment in this case, since there was some metallic iron remaining on the blade. PEG attacks and can be potentially damaging to iron unless specific precautions are taken.

Once the partisan was cast and the wooden handle conserved, final photographs and drawings were made of the reconstructed complete piece. Observations, such as the success rate of the treatment used and the final appearance of the object, were also included in the conservation record. The notes made before, during, and after the conservation process aid in the analysis of artifacts.

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