

Antique Bronze: Confirming The Genuine

In an art world in which questions of provenance and authenticity can make or break a sale it is important to understand how one can confirm whether or not one's piece is genuine. Dr. Robert Faltermeier, an expert conservator, looks at the problems one faces with antique bronze sculpture and what one can do to protect oneself against copies and fakes.

Antiques have been copied for thousands of years, be it in ancient China or throughout the Roman Empire. This was not necessarily done with a fraudulent mindset, but a strong admiration for the aesthetic expressiveness and quality of craftsmanship of the ancient artisans. At present there is a renaissance of this admiration for the old masters, and there is a grand revival of all that is remotely antique.

This is specially the case in the Asian context, since the European, and specifically Mediterranean, trade in antiquities has been limited to pieces with known provenance and old collections, thanks to the signing of UNESCO and Unidroit Conventions: the Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (UNESCO 1970) UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects (UNIDROIT 1995).

For hundreds of years, travelers visiting a holiday destination have sought mementos to remember their trip by. Today, such mementos can range from less expensive T-shirts to high-end antiques—both reflecting the culture of the country visited. The practice of such trophy-hunting has continued through to the present and such trophies are easily obtainable

from shopping malls and markets in whichever region one may be in. The hunger for fashionable antiques such as bronzes (regardless of their authenticity) and for bargain-basement prices is taken care of by some members of the art trade.

Bronze is usually a copper-tin-lead alloy—but it brass (copper-zinc) or even modern bronzes made with silicon and nickel—is called bronze. As copper has always been a precious commodity, techniques were usually devised to minimize the quantity needed to produce an artifact. In most cases the lost wax casting technique was used. With this technique, a model is produced in wax, which is then replaced by bronze during casting. Until today, this technique is applied to reproduce sculptures in bronze of any size and shape, and is also used to make copies of

antique bronzes which can later be sold as reproductions or fakes.

The wax copy of an original antique is usually slightly altered to distract from the original piece, and details such as inscriptions are added to beautify the bronze or give it a special provenance or origin. The wax is then cast into a new bronze. The bronze used for casting could be made of antique scrap metal from "less valuable pieces" or can be similar to the ancient alloys, since modern analysis of ancient bronzes have been widely published and forgers are aware of these publications, listing origin, date, and exact composition down to parts per millions.

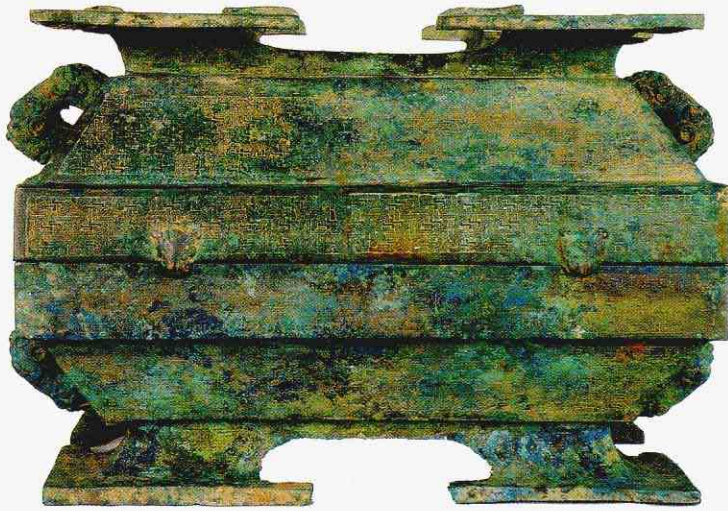
What differentiates the original from the copy is the patina or corrosion present on the surface. There are urban myths that bronzes are acid-pickled, urine-treated and then buried for a few years in the ground, which supposedly results in

the same patinas as the patinas or corrosion structures obtained over centuries. The fake patina, however, is usually easily spotted. Specialized scientific techniques need to be applied to show the deviation from naturally grown patinas, usually performed only in top-of-the-range fakes.

There are various methods of determining if an artwork is an antique or a reproduction. This can be determined either by its art historical merits or the material science information contained within the surface and body of the bronze. The traditional way is by looking at the art historical consistency of similar pieces.



Archaic bronze vessel, Ding, Warring States (476 BC – 221 BC). All photographs: Courtesy of private collection of Mr. Tony Gim, Kuala Lumpur.



Archaic bronze vessel, Poo, Western Zhou period (1100 BC – 771 BC).



Archaic bronze vessel, Bianhu, Warring States (476 BC – 221 BC).

This is done by comparing the shape and iconography of equivalent bronzes. This requires decades of scrutinizing bronzes and knowing their history, it is also dependent on the aptitude and preferences of the individual. The drawback of this technique is that if a bronze is produced by the lost wax casting technique and an exact reproduction of an original artwork it will have the same shape and most of the details. However, the definition of the reproduction is generally not as good as the original—the outlines will be less sharp and the surface details more blurred. But for one to be able to spot the disparity of the surface, the original and the fake needs to be placed next to each other—a highly unlikely possibility.

The analysis of a bronze using material science techniques is less straightforward and requires, in most cases, specialized equipment and high labor costs. Some of the methodologies applied are partially destructive to the artwork, since they require a sampling of the original material. The scientist and the analyst do not compare shape or iconography of a bronze, but the materials present and are therefore more neutral in their approach, since they have in most cases little knowledge of the history of the artwork or the owners.

Thermoluminescence Dating, X-ray Powder Diffraction, Metallography and Microstructure, and X-ray Radiography are the four most common techniques used to determine if a bronze is ancient or is a more recent reproduction.

For the *Thermoluminescence Dating* technique a small quantity of original sand core is required, this is usually present in three-dimensional sculptures such as Buddhas, when the lost wax casting technique has been used. The technique allows the most precise dating of an artwork.

X-ray Powder Diffraction requires that small amounts of corrosion present on an ancient bronze are removed and analyzed. The corrosion, if [very] old, is of crystalline matter and is known mineral, such as cuprite, malachite, azurite, and various copper chlorides. Should there be any other minerals present, this would raise questions as to how they were derived.

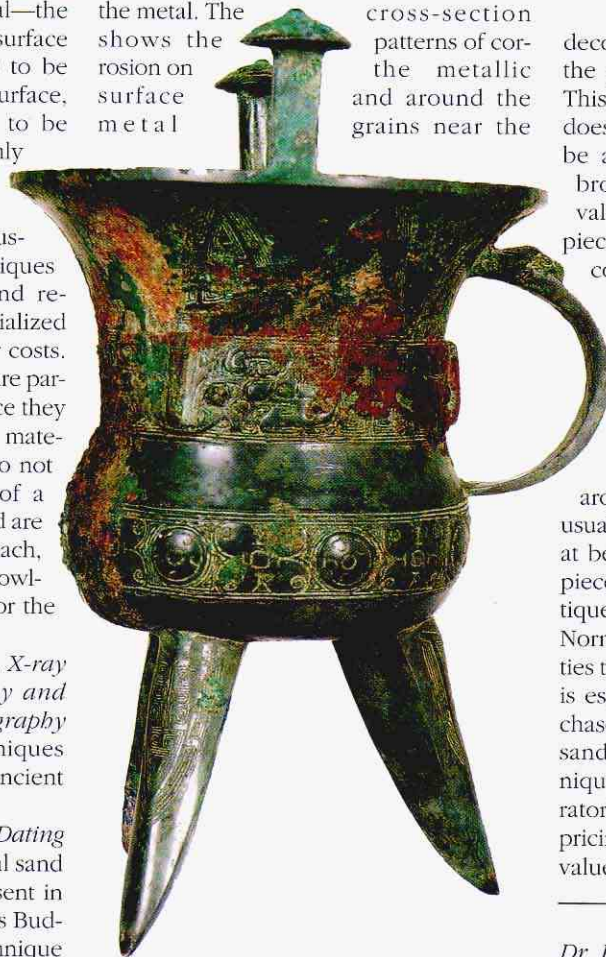
In *Metallography and Micro-structure* a cross-section from a bronze is removed in order to reveal the structure of the metal. The cross-section shows the patterns of corrosion on the surface and around the metal grains near the

surface. By this method a fake patina can be separated from an original one because the original patina or corrosion pattern would take hundreds—if not thousands of years—to grow.

Some restored or faked bronzes can contain the correct composition, corrosion products, and metallography. Using *X-ray Radiography* an x-ray image can be taken and the pasticcio of various ancient, original parts from various “less valuable” antiques can be spotted.

When acquiring a bronze as a decorative piece, the driving force behind the purchase is the appeal of the piece. This is governed by its intrinsic value, and does not necessarily require the artifact to be a genuine antique. When buying a bronze for its intrinsic and monetary value, it is important to ensure that the piece is genuine. For private and public collections, the provenance is the governing factor. When dealing with questionable artworks, it is therefore advisable to check the The Art Loss Register (ALR) (www.artloss.com) and to determine if the piece is registered as stolen or missing.

There are various certificates around in the market. They are, however, usually not based on scientific analysis, and at best will allow the buyer to return the piece for a complete refund should the antique turnout to be a copy or a forgery. Normally it is advisable to get neutral parties to advise and analyze the artwork. This is especially important in high-value purchases. If the piece is worth ten of thousands of dollars, material science techniques should be applied by neutral laboratories generally operating on standard pricing, and that are not determined on the value of the antique. Δ



Archaic bronze wine vessel, Jia, Shang dynasty (1600 BC – 1100 BC).

Dr. Robert B. Faltermeier is an expert on the conservation of sculpture. He works between Singapore and Basel.