Humble Brass Was Even Better Than Gold to a 16th-Century Tribe in Cuba

By JENNIFER PINKOWSKI

Because of its otherworldly brilliance, the 16th-century Taíno Indians of Cuba called it turey, their word for the most luminous part of the sky.

They adored its sweet smell, its reddish hue, its exotic origins and its dazzling iridescence, qualities that elevated it to the category of sacred materials known as guanín. Local chieftains wore it in pendants and medallions to show their wealth, influence and connection to the supernatural realm. Elite women and children were buried with it.

What was this treasured stuff? Humble brass — specifically, the lace tags and fasteners from Spanish explorers' shoes and clothes, for which the Taíno eagerly traded their local gold.

A team of archaeologists from University College London and the Cuban Ministry of Science, Technology and Environment came to these conclusions by analyzing small brass tubes found in two dozen burial sites in the Taíno village of El Chorro de Maíta in northeastern Cuba, according to a recent paper in The Journal of Archaeological Science.

The graves mostly date to the late 15th and early 16th centuries, when waves of gold-hungry conquistadors landed on Caribbean shores. Within decades, the Taíno, like their neighbors the Carib and the Arawak, were largely wiped out by genocide, slavery and disease.

But the archaeologists say this is not the whole picture. Their research — the first systematic study of metals from a Cuban archaeological site — focuses on one of the few indigenous settlements ever found that date from the period after the arrival of Europeans. The scientists say the finds add important detail and nuance to a history of the Caribbean long dominated by the first-person reportage of the Europeans themselves.

"It's certainly true that the arrival of the Europeans was in the short term devastating," said Marcos Martinón-Torres of University College London, the project's lead researcher. "But instead of lumping the Taíno in all together as 'the Indians of Cuba who were eliminated by the Spaniards,' we're trying to show they were people who made choices. They had their own lives. They decided to incorporate European goods into their value system."

Brass first came to the Americas with Europeans. While a few brass artifacts have been found elsewhere in the Caribbean, no one knows when and how they were acquired. In contrast, El Chorro, first excavated in the mid-1980s, is one of the best-preserved sites in Cuba, and its artifacts have a clear archaeological context.

Training X-rays and microscopes on a half-dozen pendants, Dr. Martinón-Torres and a Cuban archaeologist, Roberto Valcárcel Rojas, determined the metals' bulk chemical composition. It was a mixture of zinc and copper — the elements of brass.

They then used a scanning electron microscope to find the pendants' unique geochemical signature. All came from Nuremberg, Germany, a center of brass production since the Middle Ages.

The few other metal artifacts from the cemetery — pendants made from a gold-copper-silver alloy — probably came from Colombia, where the Taíno are thought to have originated. Only two tiny gold nuggets, of local origin, were found.

Sixteenth-century portraits in places like the Tate Gallery held further clues. Many subjects wear bootlaces and bodices fastened with objects strikingly like those found in the graves. Similar objects have been excavated from early colonial settlements, including Havana and Jamestown, Va.

European accounts said the Taíno traded 200 pieces of gold for a single piece of guanín, of which brass was the highest form. Yet the residents of El Chorro may not have considered the trade unfair, said Jago Cooper, a field director for the project. In fact, access to European brass may have increased the power of local chieftains, hastening the transition from an egalitarian society to a hierarchical one.

The finds from El Chorro suggest that interaction between the Taíno and the Europeans may have been more varied than once thought.

"Large European materials being incorporated into their culture, and exotic materials being used to reflect Taíno beliefs — it's new, important evidence for what was happening during contact," said William F. Keegan, an archaeologist at the University of Florida and the co-editor of The Journal of Caribbean Archaeology, who was not involved in the research. "There's been a tendency to assume the Taínos quickly disappeared due to European diseases and harsh treatment by the Spanish, but there's increasing evidence that the culture continued to be vibrant until the middle of the 16th century."

Some of that evidence comes from another site in Cuba: Los Buchillones, a coastal settlement about 200 miles west of El Chorro de Maíta. First excavated in 1998 by a Cuban-Canadian team, Los Buchillones is the site of the only known intact Taíno house. In the last decade, continuing study of the site and the surrounding region by Mr. Valcárcel Rojas and Mr. Cooper has revealed a community with trade networks all over the Greater Antilles that survived into the Spanish colonial period in the early 17th century. Clearly, they would have known about Europeans' presence, but chose to avoid contact, unlike El Chorro's chieftains. It may have kept them alive longer.

Together, the sites hint at an array of tactics not documented by the Europeans. "Most accounts seem to be based on the idea that Europeans 'acted' and Taíno 'reacted,' " said Elizabeth Graham of University College London, who with her husband, David Pendergast, first excavated Los Buchillones. "In the case of El Chorro de Maíta, the Taíno were clearly being proactive."

Artifacts add native nuance to a story told mostly by Europeans.

The finds at El Chorro also help to fill a hole in the study of the Caribbean past created by Cuba's political isolation. Archaeology of the island has been little known outside of its borders since the 1959 revolution. Very few foreign archaeologists have dug there, and the few field reports published by Cuban archaeologists, mostly trained by Soviet scholars, are difficult to get outside the country.

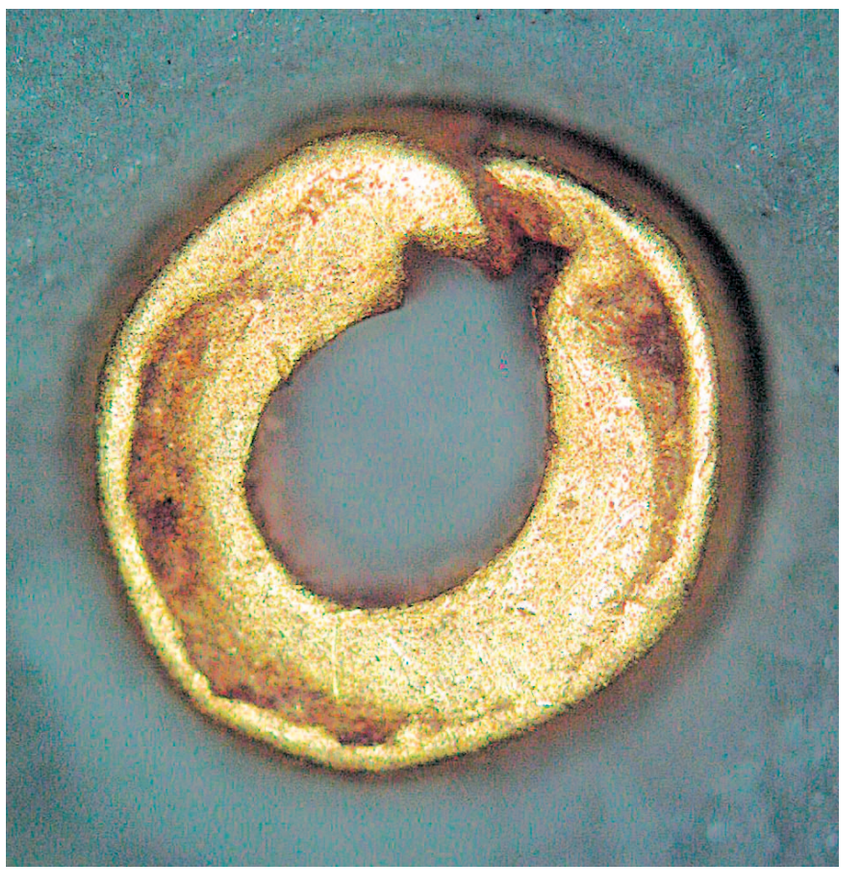
In recent years, there have been efforts to bring Cuban archaeology out of the long shadow cast by the 45-year-old United States sanctions. In 2005, the scholarly volume Dialogues in Cuban Archaeology assembled a dozen English-language reports in one place. (In it is a paper Mr. Valcárcel Rojas co-wrote about El Chorro de Maíta.) The relatively new Journal of Caribbean Archaeology currently has its first Cuban paper in peer review.

For most American archaeologists, papers published by their international colleagues are about as close as they are going to get to Cuba these days. Since 2004, the Bush administration has greatly tightened restrictions on educational travel to Cuba; programs under 10 weeks are now prohibited. Last summer, Florida went a step further, banning public universities from spending money on research in countries the State Department considers state sponsors of terrorism, including Cuba. Both sets of regulations are being challenged in court.

Last spring, Mr. Valcárcel Rojas was denied a visa to attend the annual Society for American Archaeology conference in Puerto Rico. Dr. Martinón-Torres and Mr. Cooper presented the research — which received Cuba's highest academic prize — without him.

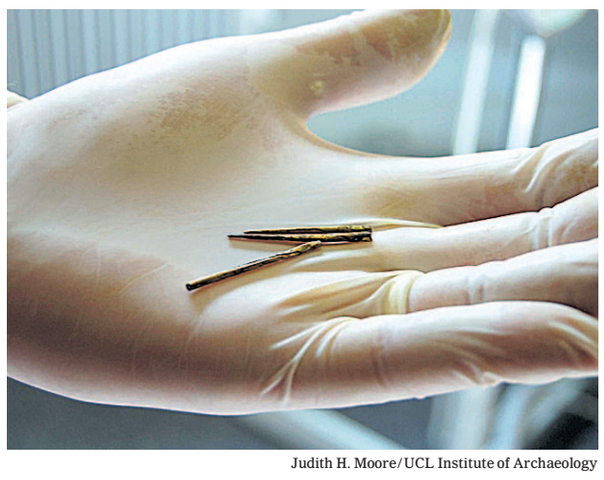
Still, the British-Cuban team is seeking a three-year grant in hopes of uncovering the trade and social networks that connected El Chorro's inhabitants — in particular, the effects of the brass-gold trade on those connections. And there is European behavior to puzzle out, too.

"We would expect the Europeans to load up with brass in their cargos, but we haven't found that brass in Cuba," Dr. Martinón-Torres said. "It's possible it hasn't been recognized by archaeologists. We expect if both sides were happy with this exchange, there must be more evidence of it."



Top left, top right, above and below, Institute of Archaeology, University College London

ON LOCATION Left, one of only two gold pieces found in two dozen burial sites in the Taíno village of El Chorro de Maíta, Cuba. European accounts say the Taíno would trade 200 pieces of gold for a single piece of brass. Below, several of the burial sites contained metal artifacts, used as pendants, that probably came from Colombia, where the Taíno are though to have originated. Huts have been reconstructed near the site as a heritage center.



Judith H. Moore/UCL Institute of Archaeology

IN EUROPE Right, a 17th-century portrait of William Style of Langley, England, shows him wearing lace tags, above, and other accouterments like those found in Cuba. Above right, brass tubes of European origin, which were woven into textiles as pendants.

Above, Tate Images; map, The New York Times

OBSERVATORY

Henry Fountain

Same Lobsters, More Whales

Maine lobstermen work extremely hard, baiting, setting, hauling and repairing traps just about every day of the year.

But do they work too hard? Ransom A. Myers of Dalhousie University in Nova Scotia and colleagues argue that they do, and that by slacking off a bit they could help protect the North Atlantic right whale.

The whales have been in dire straits for decades, and currently number about 350 individuals off the coast of North America. Although they are a protected species, accidental deaths have slowed their recovery. Major causes of death are collisions with ships and entanglement in fishing gear, including the lines connecting lobster traps to surface buoys and to one another.

In a study in Current Biology, the researchers compared lobstering on the American and Canadian sides of the Gulf of Maine. On the Canadian side, southwest of Nova Scotia, lobstering is allowed from December to May, and fewer than 400,000 traps are used. In Maine, lobstering is an all-year activity, with 3.2 million traps.

Yet for all those differences, the Maine harvest is just 30 percent greater than on the Canadian side. The researchers estimate that Maine lobstermen could cut their season in half, reduce the number of traps by a factor of 10 and still harvest as many lobsters.

Most sightings of right whales in the Gulf of Maine occur in spring and summer. By shifting the Maine lobstering season and greatly reducing the number of traps, the researchers say, the risk to the whales would be greatly reduced.

Photographs courtesy of Jeremy Holden

QUITE A BOUQUET Rafflesia arnoldii is the world's largest flower and smells like rotting flesh. It is also a parasite and lacks roots and leaves.

A Smelly Puzzle, Solved

Rafflesia arnoldii is no shrinking violet. At up to three feet in diameter, it's the world's largest flower. It's also possibly the most repulsive — it looks and smells like rotting flesh (the better to attract flies, which act as pollinators).

But while Rafflesia may be easy to describe, it has been much harder to classify. It's a parasite, embedding itself in vines in the understory of pristine rainforests in Indonesia, and it lacks the roots, stems, leaves and photosynthesizing machinery that would give scientists a clue as to its evolutionary background.

Rafflesia and related species "really have remained a mystery," said Charles C. Davis, an evolutionary biologist at Harvard. Genetic analysis is required, and although initial work by Dr. Davis and others put them in the order Malpighiales, the research was insufficient to pinpoint their place within the order.

Now, Dr. Davis and colleagues have done more genetic research to solve the puzzle. Their conclusion, published online by the journal Science, is that the Rafflesiaceae, as this family of species is known, are nestled within the spurge family, which includes rubber plants, castor, cassava and poinsettia. "They are smack dab in the middle," Dr. Davis said.

In some ways this is a surprise, because spurges are so well known. On the other hand, Dr. Davis said, the Rafflesiaceae "are so off on their own trip that their position within any group would require some explaining."

One thing that requires explaining, Dr. Davis said, is the remarkable range in size. Among the spurges are some with very small flowers. The researchers estimated that as the Rafflesiaceae diverged over 46 million years, floral size increased 79-fold.

"These plants flower in understory rainforest environments, which are dimly lit, so they are not easily seen by pollinators," Dr. Davis said. "They would have had incredible incentive to increase their surface area, to maximize odor production and bring in these pollinators."

Moths and a Drink of Tears

Moths and butterflies obtain moisture wherever they can find it — in Africa, Asia and South America, even from the tears of mammals and reptiles. But until now, no moth or butterfly has been seen drinking tears from a bird.

Roland Hilgartner of the University of Ulm in Germany and colleagues observed a species of moth in Madagascar, Hemiceratoides hieroglyphica, that alights on the neck of a sleeping magpie or Newtonia bird and sticks its long proboscis between the bird's closed eyelids. Moths were observed in this position for 30 minutes or longer, presumably drinking the bird's tears. The finding was reported in Biology Letters.

The moth's proboscis is about half an inch long (about half the moth's length), with a sharp point and many tiny spines and barbs. The researchers suggest that it functions somewhat like a harpoon, because it has to go not only between upper and lower eyelids, but also through the bird's nictitating membrane, which further protects the eyes.

In this way it is more like blood-sucking moths and less like other tear drinkers, which generally have soft-tipped proboscises.