Artisans and Archaeologists: A Special Section on the Study of Crafts in India

Observing a skilled artisan at work brings to the viewer an understanding that is both aesthetic and intellectual, and that is absorbed through avenues other than words. It is the way apprentices around the world have traditionally learned their crafts. For scholars, the study of material culture is enhanced enormously by direct observation. It can yield information on many aspects of technology, from the technical and material to the social and cultural, about which the artisans themselves may not be aware or be able to verbalize. Observing work in progress may lead to questions that otherwise might not have been asked, and broadens the range of possibilities to be considered by archaeologists reconstructing past craft activities and organizations.

Those who study the past do not have the advantage of being able to observe ancient artisans at work and to question them about what they did and why they did it and how their crafts fit into the rest of their lives. These scholars can, however, look at how similar crafts are being pursued today, and use that information to help them assess what they find from the past or to augment their general understanding of craft activities and their role in society.

Western scholars today are generally shut off from this way of learning on their home ground. In the United States, for example, handmade items tend to be imported rather than made domestically, even in rural areas the traditional potter, the basket maker, the weaver, or the blacksmith is no longer a common part of everyday life. Among the shrinking number of places where pottery making and metal working still remain viable ways of making a living, India has attracted much academic (and popular) attention. The studies in the following special section are three examples of this recent interest in Indian crafts and craftpersons. All entailed direct observation of artisans, from the four corners of India, who in their homeland are makers of both ritual and utilitarian objects in terracotta and in metal.

The approaches used in the three studies are not all the same, however. While all of the authors are archaeologists by training, Reedy is also an art historian concerned with finding ways of resolving some of the unknowns presented by unprovenanced medieval statues in museum collections. Beaudry, Kenoyer, and Wright are archaeologists who have a special interest in the study of pottery, which for its abundance, preservation, and interpretive utility is the archaeological artifact par excellence. Horne works more directly in the present, concentrating on contemporary craft production and the role of specialists in a changing society.

Significantly, these three studies are all museum-based. Two originated in public programs and documentation, the third in the study of museum collections. It is becoming apparent from projects like those described here that museums of art, archaeology, or ethnography benefit greatly from adding an ethnographic component to the more traditional static display or public lecture upon which the dissemination of information has depended in the past.

Lee Horne

In the spring of 1986, Sri Haradhan Karmakar (Figs. 1,2), a brasscaster from West Bengal, came to Philadelphia to participate in the Festival of India exhibit, Mahamaya, at the Port of History Museum. During his stay, he came twice to cast his molds in the courtyard of the University Museum as a demonstrator for the Museum’s International Classroom program. At the same time, the Museum Applied Science Center for Archaeology (MASCA) began a project of documentation and research in Philadelphia, which may eventually become a full-scale field project on traditional metalworking in India. This article reports the first results of that project.

Introduction

The members of the Dariapur Artisans Cooperative in Burdwan District of West Bengal (Fig. 4) are brasscasters by hereditary occupation. Working with simple tools and (except for brass) indigenous materials, they turn delicately decorated wax models into traditional eastern In-
Brasscasting in Dariapur

The following description briefly outlines the stages of dhokra brass casting as carried out by Dariapuri artisans today. Variations in materials and minor points of technique appear in other parts of the region, but the basic steps remain the same.

First a clay core is modeled to rough out the object. The core is smoothly finished but is without detail. In the case of, say, a rice measuring bowl, it will be a smaller undecorated version of the finished product. In other cases the core is a simplified version of the desired object. The cores for animal figurines, for example, usually have only rudimentary limbs; ears, tails and other anatomical and decorative details will be added later in resin.

In the second step, a "wax" made of shal tree resin, or other similar material such as paraffin or beeswax, is poured over the sun-dried core (Fig. 3). Since little work will be done to the cast piece except to break out the mold and file or burnish it, every detail desired in the final cast piece must be present on the model. A resin strut attached to one end of the model will become the tube through which the molten metal is poured into the mold after the resin has been burned out.

When the resin model is finished, it is covered with several layers of slip-like clay and ash. This material must be both fine and porous so that it will faithfully reproduce in baked form the details of the resin model at the same time that it permits the heat to vaporize the resin through the mold. Then a more substantial clay mold is built over the inner clay layer (see Figs. 5, 6), and a flaring neck is built up to become the pouring spout for the attached crucible.

Unlike most other cire perdue techniques, the crucible used by the Dariapuri is not a separate container in which metal is heated and then poured out, but rather an intrinsic part of the mold itself, built up from the flaring neck at the top of the mold and filled with broken bits of brass. This bipartite mold is baked in a kiln to vaporize the resin and to melt the metal, then removed and rotated so that the metal can run down into the now hollow mold (Fig. 7). The mold is then set to cool, after which the finished article is broken out and wire-brushed to clean and burnish it (Fig. 8).

If no core is used and the model is a solid piece of wax or resin, the casting too will be solid metal. When the resin is built up over a clay core, however, the core remains inside the metal shell and may or may not be broken out. This kind of product is called hollow-cast, even when the core is left inside, as is the case in Dariapur. Hollow casting is conservative of metal (and therefore of fuel) and less tricky in terms of potential flaws and miscasts than is solid casting. Even with hollow casting, however, large pieces require more elaborate provisions, such as vents to permit gases to escape and chaplets to prevent the core from moving about within the mold. The Dariapuris do not ordinarily resort to these measures. Large or very complex pieces are usually cast in multiple parts and later soldered together.
The Malhars of Dariapur

Brasscasters like the Malhar are new to permanent village life. Until the 1940s, most of them were itinerant, perhaps settling now and then in small groups outside agricultural villages, but always remaining highly mobile and quick to pick up and move on with the demand of the market. They are members of one of a number of similarly isolated groups that can be found scattered throughout parts of Madhya Pradesh, Bihar, Orissa, and West Bengal. Many of these groups call themselves by variants of the same name, such as Mal, Malar, Maral, Malhor, or Malah; all are thought to share a common origin in the tribal area of Chota Nagpur, from whence they have spread out over the past several hundred years. The hills of Chota Nagpur and surrounding areas are the mineral belt of India; copper smelting and, until recently, iron smelting were carried out by tribal people using traditional methods. It should not be surprising, therefore, that metalworking artisans were also to be found here. Apparently most groups specialized in certain kinds of products, depending on the clients they served. In tribal areas the demand for brass anklets, dancing bells, and jewelry was high. Hindu villagers bought images of deities, which had no market in Muslim villages.

Unfortunately, the history of the Malhar of Dariapur is, like most of the other groups, unrecorded either in written texts or in their own oral tradition. This group of Malhar claim not to have made images at all in the past, and in fact they learned to make their animal, human, and godly figures in development workshops from members of other groups. They know that they have come most recently from other areas of West Bengal and, before that, from Orissa; their dialect reflects not only their more westerly origins, but also the several areas in which they have lived on their way to their present location.

The Dhokra Technique

These brasscasters of the eastern states of India share not only common origins and general adaptations, but also a characteristic technique and style based on lost wax casting. Cire perdue (lost wax) casting is so called from the wax model that is melted out from within a mold, leaving a hollow space to be filled with molten metal. The technique is of some antiquity, known from at least the 4th millennium in the Near East and the 3rd millennium in India. The style and technique of cire perdue brasscasting peculiar to the Malhar and other related groups has come to be known by the term dhokra. (Originally derogatory [Ghose 1991: 58], "dhokra" should not be applied to the workers but only to the technique, for which it has become the standard term.) Dhokra work, and related kinds of rural brasswork often referred to as "tribal," is clearly distinct from metalwork in the classical Indian tradition. The contrast is especially great in the case of examples collected from the eastern states in the 19th and early 20th centuries, where totemic clan animals, heavy tribal ornaments, and tattooed female figures attest to a close relationship between metalworker and tribal patron.

Except for very small or flat pieces, dhokra work is hollow cast, that is cast with a shell of metal over an internal clay core. It is also stylistically distinct not only from urban metalwork, but also from rural or tribal casting in other parts of India. The surfaces are wrapped and elaborated with threaded designs (see Fig. 8) in a kind of "false filigree" that is cast in one with the piece rather than added later. Several recent examples made by Sri Haradhan Karmakar of Dariapur and now in The University Museum's collections are illustrated here.

Sets of rice measuring bowls are popular with both the traditional and the development market. The bowls are calibrated by wrapping palm leaf strips about the circumference of the sun-dried clay core and filing the core to size.
Unusual though the style may appear, techniques and products closely resembling dhokra work are not unique to eastern India. Very similar work in gold and gold alloy was known in pre-Columbian America, for example, as well as in West Africa in both the past and the present.

Like other forms of *cire perdue* casting, the dhokra version is elegant, simple, and requires little in the way of capital investment or tools. (See box for a step-by-step description of the process in Dariapur.) Much about the craft is reminiscent of a peripatetic lifestyle. Tools, materials, and structures are either highly portable or can be procured or constructed on the spot. Although simple tools are used, virtually everything can be done by hand.

The metal itself actually plays a minor role in the working process (Ghose 1981: 57). The artifact is effectively conceived and created in clay and wax; casting makes it permanent and transforms it into a medium with enhanced symbolic and aesthetic value. Unlike classical or urban metalworking, dhokra work is designed so that little finishing is required after the piece is broken out of the mold. The more carefully the earlier steps are attended to, the less necessary will be work on the finished piece, where skills and tools of a different kind must be applied to achieve high quality results.

The technology, or more properly the techniques, of dhokra working have remained essentially the same even under deteriorating conditions. The several kinds of materials and tools that are used by different groups are really variations on a theme. The falling-off in quality of production in recent years has more to do with other kinds of changes than with a loss of skill or knowledge. These changes are in the social and economic context in which the craft is practiced.

**The Changing Context**

The way craft production and distribution are organized at the Cooperative is a relatively new phenomenon in India. Cooperatives like Dariapur have been created in response to national concern over the social and economic repercussions of the loss of traditional patronage for craft items. The immediate practical tasks of these and other kinds of craft workshops and councils are to insure a high standard of technical and stylistic quality, provide a constant demand for products, and act as middlemen to urban and international markets. Indeed, it has been said that the Indian government has become the main patron of traditional Indian crafts today (Chatterjee 1986).

Not only patrons, but market organization, availability of materials, and product demand (including access to mass-produced substitutes) have changed dramatically even within the present generation. These changes, abrupt as they are, should still be seen as part of a more gradual history of change in many areas of rural life in the eastern states over the past hundred years and more.

That traditional brass-casting appears to be timeless and unchanging is undoubtedly in part because it has gone largely undocumented, and in part from a habit of thinking that prefers to see traditional ways and peoples as timeless and unchanging. Certainly the reconstructed history of the brass-casters itself argues for, rather than against change, at least within certain parameters. With that warning in mind, let us look at what sort of change really do set the present situation apart from the past.

In the past, patrons frequently were active links to the production process and not just passive purchasers. Metal for casting was either scrap from bazaars or discarded brassware collected from local housewives. With the replacement of handmade goods by industrial imports, households that once used only bell metal and brass now use aluminum and plastic. For this and other reasons, the cost of scrap has gone up. In fact, for years aluminum has been a widely used metal for jewelry and other objects in many areas. The exchanges that once provided noncommercially collected beeswax, resin, and mustard oil have been replaced by purchase of commercial supplies from shops. Fuel too must be purchased with cash and at increasing...
Modern Statues and Traditional Methods

A Casting Workshop in Chamba, Himachal Pradesh, Northwest India

CHANDRAL REEDY

Introduction

Northwest India is renowned among art historians for the Buddhist and Hindu copper alloy statues produced there during the medieval period (7th through 9th centuries). The iconography of these statues is often complex, and the craftsmanship superb. One typical example is illustrated here (Fig. 1). This image represents a four-armed form of the Hindu god Vishnu. He stands with his upper hands holding a conch shell and a lotus flower, while his two lower hands rest atop the heads of his personified weapons, Gadaevi and Chakrapurusha. This particular representation of Vishnu was especially popular throughout medieval northwest India.

During the medieval period, the area surrounding the town of Chamba in the state of Himachal Pradesh (Fig. 2) was an important political and artistic center. Although archaeological evidence concerning metal casting and artistic production there is scanty, some artwork of the period still remains in the local temples, and a number of statues now in museums and private collections are attributed on a stylistic basis to Himachal Pradesh and to Chamba. (For a wide range of examples see Postel, Neven and Mankodi 1985.)

In order to better understand the casting and decorating features observed on these medieval statues, in 1983 I visited a modern workshop located in Chamba that produces statues technically similar to the older pieces. Techniques of manufacturing and decorating were observed as an aid to understanding the procedures which may have been followed by local artists during the medieval period. This workshop is part of the Thakurji Talai Rattan workshop of the Los Angeles County Museum of Art Conservation Center, in which technical analyses, including studies of casting and decorating techniques, have been used to help establish the regional provenience of medieval Himalayan copper alloy statues.

Geographical and Historical Background

The modern town of Chamba is located along the Ravi river in Himachal Pradesh. The medieval territory included several other towns and small villages surrounding the town of Chamba itself. The administrative capital of the territory during the early medieval period was located 65 kilometers away at Brahmor, but was moved to Chamba in the 10th century. The town occupies a half-mile-wide valley part of the surrounding hillsides above the Ravi river. Because of the mountainous terrain, historically the economy of Chamba has depended more upon its rich forests and abundant

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