

The Brasscasters of Dariapur, West Bengal

Artisans in a Changing World

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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-



1 Back home in West Bengal, Haradhan Karmakar and his family work in front of their house in the Dariapur Artisan's Cooperative. They are fashioning figures in clay and resin that will later be cast in brass.



2 On a spring day in Philadelphia, schoolchildren gathered around Haradhan Karmakar at work in the courtyard of The University Museum. This brasscasting demonstration turned out to be the first step in a long-term study of Indian crafts sponsored by the Museum.

dian versions of brass items such as rice measuring bowls, oil lamps, fish containers, horses, elephants, tribal and Hindu deities. Their small settlement lies directly on the paved road from Gushkara to Dariapur. It is in a slight depression, hidden by the grove of trees that has grown up since the village was built in the early 1960s.

Inside the grove the settlement comes to life. At the entrance is the Cooperative office and a large open common workshed. Beyond stand several long rows of mudplastered brick dwellings whose individual rooms open onto roofed verandas. In the dusty lanes children play, women talk and cook or wash clothes, animals rest in the shade. Behind the residential area lie open-air shrines and the embankments of the village water tank.

In spite of superficial resemblances, however, the Artisans Cooperative is not a typical Bengali village of multi-caste composition and varied agricultural and productive activity. It is instead a specialized craft settlement in which fifteen or so closely related families live and work. Everyone in the village is known by the occupational surname Karmakar; no outsiders live among them. The Dariapuris refer to themselves as Malhar and speak as their mother tongue a language of the same name, rather than Bengali. All

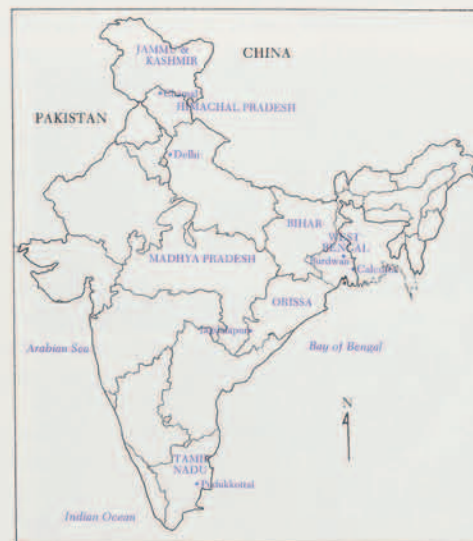
are metalworkers by trade. A few animals—cows, chickens, goats—and a small amount of land contribute to their subsistence needs, but the occupants are nevertheless primarily craft specialists.

The villagers appear to be fully occupied. Singly or in pairs, men and older women work at model shaping and mold making. Younger women tend to children and household chores. But no casting

takes place. Instead, molds are stockpiled in sheds and along the sides of the buildings because at the moment there is no money for brass with which to cast. In spite of the national and international acclaim recently given to the best workers among them, the Cooperative is struggling to survive; its story is typical in outline, if not in detail, of the changing roles of crafts and craftspersons in India today.



3 A Dariapuri wraps dark resin strips around elephant-lamp models. Some artisans make only a few kinds of objects. Others, like Haradhan, have a broad and inventive repertoire.



4 Map of India, showing location of West Bengal.



5 A woman covers headless elephant models with clay prior to baking. The heads, made separately, are joined to the bodies in a later step.

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 applied over the sun-dried core (Fig. 3). Since little work will be done to the cast piece except to brush off the mold and file or burnish it, every detail desired in the final cast piece must be present on the resin 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 Dariapuris 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.



6 Molds in various stages of readiness dry in the sun.



7 A mold just out of the kiln is tipped so that the molten metal in one end can pour into the hollow impression in the other. Fellow artisans watch closely, ready to slap mud onto cracks through which red-hot metal might escape.

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 through 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 Mahuli; all are thought to share a common origin in the tribal area of Chota Nagpur, from whence they have spread 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

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A lidded container in the shape of an owl. Every detail of the original wax model has been faithfully captured in brass. This piece is one of the set cast by Haradhan Karmakar in the Museum courtyard in 1986, and now in the Museum's collections. Bits of the clay mold still cling to the owl's feet. (86-14-1a, b. Height ca. 7 in.)

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



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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.

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 1981: 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.



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Haradhan and an elaborate lamp stand commissioned by a Delhi patron. Large pieces are always specially commissioned.

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



11 Some recently made pieces available for purchase. The horse and elephant are traditional figures, but the mosque is an innovative piece, made by one of the Dariapuri artisans for a regional crafts competition.

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 brasscasting 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 brasscasters itself argues for, rather than against change, at least within certain parameters. With that warning in mind, let us look at what sorts 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



12 Although the traditional market is disappearing, these craftsmen still come from 100 kilometers away to sell their products at the annual fair in Sriniketan, West Bengal.

ly higher prices. Even clay is not always easy to come by, especially since the Malhar now are sedentary and cannot move freely to the resources that they need.

The saleability of objects has changed too. Traditionally, dhokra products were both utilitarian (albeit always decoratively and symbolically elaborated; see Fig. 9) and functionally religious, intended for shrines and ritual. Standard bazaar stock was made up in advance, and expensive or customized pieces could be specially commissioned (Fig. 10). Today, some products continue to be made for sale in local markets (Fig. 11), but for the most part, the old demand is gone. Quality brass products are too expensive for the traditional market. Mass-produced substitutes replace the things once made solely by the Malhar and other local artisans. In order to find an outlet for their products, a wider market is being actively sought, one in which images, ornaments, and containers are used to decorate homes rather than serving as elements in village or tribal ritual, dance, and gift giving (Fig. 11).

The strains that the Malhar must deal with are not just those of finding a broader-based market, or of financing production and obtaining raw materials. They also face their own changing organization and social and cultural practices. The values and goals of a commercial work ethic have not been part of the Malhars' cultural repertoire: living together in a permanent community, working to a schedule imposed from outside, separation of work from social and ritual life, all are new. And now, in addition to their changing relationships with each other and the local world, craftspersons are frequently called upon in new roles within the larger society, as mastercraftsmen-cum-teachers, performer-artisans in craft exhibitions, and cultural diplomats in international productions (see Beaudry et al., this issue). Haradhan Karmakar has not only been to Philadelphia in this capacity, he has also been to London, Chicago, and at the time of writing, Japan.

While development projects can restore techniques and provide materials, they cannot reconstruct

or restore the broken social and economic relationships between traditional patron and artisan. Finding ways to keep today's craftworkers active thus takes more than finding the right markets and middlemen. Successful craft development programs also take into account the nature of existing roles and relationships. They recognize the realities of change and the ways in which particular crafts communities have been affected by them. They seek to work out, in consultation with the artisans themselves, the most appropriate ways of adapting to an increasingly commercial market while maintaining enough resilience to weather its uncertainties.

The intense interest found both within India and in outside western countries to document, preserve, and restore vigor to her struggling crafts raises a complex set of issues,

for which there are no simple answers. It is even sometimes asked whether it might not be best, after all, to let ailing crafts die a "noble death." For those who met at the Crafts India Workshop in October 1986, such a proposition is untenable. Aside from the value attached to handmade products by many Indians, a value with a deep political and cultural history and one given official sanction by the government, of paramount importance is the fact that there are an estimated 3 to 20 million craftspersons in India today (Chatterjee 1986). If their children do not want to or cannot afford to follow the family occupation, they will seek other education and other jobs. But for the present generation, neither is a viable reality. By finding ways to keep today's craftworkers productive and self-supporting, it may be possible to save the crafts as well. **21**



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