



Dhokra: A Traditional Metal Craft in India

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Abstract

This paper discusses the historical perspective of the traditional metal casting technique of the “Dhokra” handicraft. It is based on secondary sources such as published papers, books on the metal craft, and print media. For the first time, this technique was observed in the Indus Valley civilization when a dancing girl figurine in bronze from Mohenjo-Daro was discovered. This figurine was made by lost wax technique (Cire Perdue technique). Since then, it continued in some of the Indian tribes i.e. Gadwa, and Gonds. Ghasi and Chitraghasi, Damar Malhor, etc. who are continuing the practising of the Dhokra craft. It is prevalent in the states of Odisha, West Bengal, Chhattisgarh, Madhya Pradesh, Jharkhand, and Telangana. The Dhokra craft is known as a non-ferrous metal casting process. The purpose of the paper is to understand this specific metal craft which has a significant position in tribal communities. The age-old tribal tradition have very often followed this metal craft. It presents the social, economic, and religious aspects of the tribal societies.

Keywords: Dhokra craft, lost wax technique (Cire Perdue), Tribal, Metal casting

Introduction

In Mesopotamia between c. 3500-2750 BCE, the lost-wax technique was used on a small scale but later large-scale copper and bronze statues were started being sculpted. One of the earliest surviving lost-wax castings is a small lion pendant from Uruk IV. Sumerian metal workers were practicing lost-wax casting from c 3500-3200 BCE. The rich Indian handicraft dates back to the Chalcolithic phase and has still continued in varied materials and forms. Indian handicrafts have evolved over the centuries to become a defining aspect of the country’s cultural heritage. The Dhokra metal art is one of them. This craft has been an integral source of livelihood as well as an expression of their artistic longings. The Bronze Age Harappan culture began around approx. 5000 years ago, when the lost wax technique was observed in the famous bronze dancing girl statue of Mohenjo-Daro which revealed that this craft existed even beyond the mature Harappan civilization. This opinion is based on the observation of acquired expertise over a long period before producing such a perfect dancing girl figurine of Bronze (Agrawal 1971; Hegde 1965; Marshall 1931; Mackay 1931; Muhly 1988; Horne 1990) [2, 9, 22, 21, 12, 10]. Many scholars such as Risley (1891) [29], Ray *et al* (2000) [26], Sahu (2015) [30], Tripathi (2018) [35], Thoury *et al* (2016) [34], Shanker and Gauri (2017) [31], Ray K (2023) [27] have mentioned about Dhokra in their research papers and books.

Dhokra is an alloy mixture of Brass (28%), Zinc (33%), and Nickel (10.6%). The southern and eastern parts of the country

mostly practiced this lost wax technique. The Dhokra craft is one of the earliest forms of artistic skill of human beings. It represents the social and religious activities of society through the craft (Agrawal 1971; Agrawal 2000; Mukharjee 2016; Reeve 1962; Ray *et al* 2000; Dikshit 2013) [2, 3, 24, 28, 26, 8]. One of the earliest surviving lost-wax castings is a small lion pendant from Uruk IV. Sumerian metalworkers were practicing lost-wax casting from approx. c 3500-3200 BC. The rich Indian handicraft dates back to the Neolithic and continues in varied materials and forms. Indian handicrafts have evolved over the centuries to become a defining aspect of the country’s cultural heritage. The Dhokra metal art is one of them. The crafts have been an integral source of livelihood as well as an expression of their artistic urge.

The tribes involved in the lost wax technique are from different areas, for example, Dhokra and Dhepos in Birbhum, Bardhaman, and Bankura districts of West Bengal; Malars in South Bihar; Ghorua, Gond, and Ghadwa in Bastar, Chhattisgarh; Betul tribal district of Madhya Pradesh. The craftsmen of the area are known as Gond, Korku, Pardhan, Bhilala, and Bharewa. In Odisha, they are also known as Ghantaras and Ghungarghar (Katiyar n.a.). The term Dhokra is derived from the word *Dhokra Damar*-a tribe of West Bengal and Odisha.

Origin

In the present day, the lost wax casting popularly known as “Dhokra” art is practiced by the metal artisans. The word

“Dhokra” first originated from a nomadic tribe ‘Dhokra Damar’ of West Bengal. It is one of the traditional metal crafts used in different states of India. These nomadic tribal groups later settled in the different regions of India like Chhattisgarh, Odisha, Jharkhand, Andhra Pradesh, and Telangana. In the tribal region of west Bengal such as Purulia, Bankura, Burdwan, Birbhum, and Medinipur, the artisans have practiced the Dhokra metal craft. The artisans of West Bengal called themselves mal, malar, malhor, mahuli (Horne 1987; Mukharjee 2016) [11, 24]. The Dhokra metal image includes the Hindu deities tribal images, animal motifs, tribal jewelry, etc. This traditional metal craft flourished in India but attracted the world. (Horne 1990; Sinha and Chakraborty 2015; Chandrashekhar 2022) [10, 33, 6]

Archaeological Evidence

Excavation of Harappan sites started in the 1920s and since then around 1056 cities have been unearthed. Out of which 96 sites have been excavated horizontally, mainly in the region of the Indus system and Ghaggar-Hakra River and its tributaries. Among these settlements, six major cities namely Harappa, Lothal, Mohenjo-Daro, Kalibanga, Rakhigarhi, and Dholavira have helped us to understand this civilization in the proper perspective. The lost wax means casting the figurine with wax and clay (process is discussed in the technique) The dancing girl bronze statue, bronze bull figurine evidence from Mohenjo-Daro, and other objects found from different sites in India (Agrawal 1971) [2]. The Cire Perdue technique is one of the oldest metallurgical arts in India. The process of the lost wax technique has been discussed in old Sanskrit texts i.e. Manasollasa, Silparatna, Manasara, and Somesvara, which give detailed description of this technique (Mukherjee 2016; Krishnan 1976; Smith and Kochhar 2004) [24, 20, 18]. In Mohenjo-Daro, Harappa, and Lothal two types of kilns have been excavated:

- i). A Circular kiln measuring 1 meter in diameter presumably used for smelting copper in ingots.
- ii). A rectangular kiln measuring 75x60 cm with a depth of 30cm.

Several metal discoveries in Lothal include figurines, amulets, pins, in the shape of bird heads, miniature figures curved and circular saw, a needle with an eye at the piercing end and a bronze drill with twisted grooves. This tool is considered an important ancient tool as it gave unparalleled precision and was widely known as the precursor to modern machinery tools.

Literary Evidences

Many Sanskrit text mentions about lost wax technique (Cire Perdue casting) these are well documented in classical literary sources such as Someswar (16th century), Silparatna (Srikumar 16th century), Manasara (16th Chapter in Madhuchista Vidhanam) and Manasolasa written by King Bhilokamala Someswara of the Chalukya dynasty. Similarly, much evidence of the lost wax method has been found in Silpasastra (c 320-550 CE) of the Gupta period. Vishnusamhita of the 5th-century ad also describes the modelling method of wax-making metal objects. Many scholars such as Kar (1952) [14], Agrawal (1971) [2], Krishnan (1976) [20], Pal (1978) [25], Sen (1994) [32], Smith and Kochhar (2004) [18], Kochhar (2011) [17], Sinha *et al* (2015) [33], Mukharjee (2016) [24].



Fig 1: Bronze Dancing Girl of Mohenjodaro

Dhokra Artisan States

Odisha: The state of Orissa is popular for Dhokra handicraft. It is largely found in southwest of Odisha, namely Kuliana in the Mayurbhanj district, Kaimatin Keonjhar district, Haradagaria in Puri district and Sadeibarni in the Dhenkanal district, Ghigidi in Raygada (Sahu 2015) [30].

Chhattisgarh: Traditionally, the Gadwas, Gonds, and Dhruwas tribes of the state practiced the Dhokra craft. The Bastar and Ektaal are the major production centers. The Ghadwas tribes of Bastar are engaged in the Dhokra art. The artisans are making religious images, figures of elephants, horses, etc. The Kondagaon and Jagdalpur of Bastar district are the important clusters where beautiful brass decorative Dhokra figurines made by artisans (Aceola.2021; Chandrashekhar 2022; ` Ray 2023) [1, 6, 27]

West Bengal: West Bengal is known for her rich traditional handicrafts. The Dhokra artisan's centers are Bankura, Birbhum, Burdwan, and Midnapur of West Bengal. It is a community-based handicraft. The brass handicraft has acquired a position among other metal crafts. The village Bikna in Bankura district and Dariyapur in Bardwan district is a hub center of Dhokra. Their works include images of men and women with musical instruments and in various, postures, animals and birds, elephants, peacocks, horses, etc. the figures depicting the daily lifestyle of the people (Risley 1891; Sen 1994; Smith and Kochhar 2004; Bhattacharya 2011; Chatterjee 2015) [29, 32, 18, 5, 7].

Jharkhand: The Dhokra craft of Jharkhand is known as “Jharcraft”. is a traditional art of Jharkhand. The Malhar or Malhora tribe of Pundi village in Jharkhand is engaged in Dhokra craft. The Malhora tribe lives in districts like Ramgarh, Dumka, and Khunti near Hazaribagh district in

Jharkhand. The Malhora tribe makes large quantity Dhokra vases, figure of idols, miniature figures and tiny jewelry.

Telangana: Dhokra metal craft widely brings glory in to the State of Telangana. It is the traditional handicraft of the state. The Ojha or Woj community of Telangana is involved in Dhokra metal casting. Dhokra craft is a tribal handicraft widely seen in Usegaon village of Jainoor Mandal, Adilabad district of Telangana. The Usegaon and Chittalbori are the major centres. They produced the various figurines, folk motifs, household articles, elephants and peacocks etc. (Shankar 2017).

Andhra Pradesh: Andhra Pradesh is a state in the southern coastal region of India. The brass metal handicraft exists in the tribal belts of Andhra. The village Budithi in central Srikakulam district is engaged in this tribal craft. They

produced brass objects like small figurines of horses; and tribal deities. The home decoration accessories are lamp holders, lamps, chains figurines and various symbols of tribal folklore and religion, and exquisite tribal jewellery of ethnic deities (Baral and Bellamkonda).

Madhya Pradesh: The local tribal community of Madhya Pradesh is involved in the Dhokra craft. The Bharewas community of Betul district is a sub-tribe of Gonds. The nearest villages of Betul namely Tigriya, Chunahazuri, Amla, and Kamleshara are engaged to improve and enrich this craft. (Katiyar; Betul<https://gaatha.org>).

An attempt has been made to find out similarities/dissimilarities in productions of different states (Table-1):

Table 1: Lost Wax Metal Artifacts Produced In Different States-A Comparative Study

State Name	Figures of Deities	Animal And Bird Figures	Decorative Figures	Utilitarian Figures	Export
Odisha	Ganesh, Durga, Shiva, Laxmi, Laxmi Narayan Naga, Trisula	Elephant, turtles, Bull, Horse, Peacock, Owl, Laxmi and Ganesh,	Human heads, king, mask, fish pen stand, chariot, flower pot, people with musical instrument	Maana Measuring pots, container with lid and without lid, lamp stand, owl designed box	Cuttack Sambalpur Raurkela, Bhubaneswar Kolkata, Delhi USA/UK
West Bengal	Durga, Trisula, Laxmi, Cattle, Saraswati, Sri Krishna, Shiva, Kartika, Ganesh	Elephant, turtles, Bull, Horse, Peacock, owl	Human figurines, Jewellery,	Lamp & (measuring pot for food grains	Kolkata Indonesia, USA, United Arab
Chhattisgarh	Trisula, Snake, Laxmi, Shiva linga, Boat with four people (Ramayana)	Elephant, Horses, Bull, Peacock	Jewellery, Candle stand, Bullock cart, boat	Miniature pots, Lamp, Decorative bowl, Kalash Oil lamps, Boxes	Raipur, Bilaspur, Raigarh Kerala, Rajasthan USA
Telangana	Ganesh, Laxmi Hanuman, Trisula, Durga, Saraswati Radha, Saibaba, Laughing Buddha, lord Venkateshwara, Krishna	Horses, Elephant Folk motifs Peacock, Nandi, cow, deer, tortoise	Wall Hanging bells Jewellery Human head, Boat Door handle fish	Measuring bowls, pen holders, Oil lamps, paper weight, cardholder Bells State logo wall hanging	Hyderabad, nearest market place New Delhi, USA,
Andhra Pradesh	Nandi, Ganesh, Laxmi, Durga, Trisul, Shiva, Naga	Nandi, Deer, Elephant, Horse, Cow, Peacock Face Mask, deer	Flower pots Face mask, tribal lady working figure, tribal standing man, etc.	Pots, Hookahs, trays, bowls lamp	Delhi, USA UK, Belgium, Singapore, European Continent, South East Asia
Jharkhand	Ganesh, Laxmi, Shiva, Nataraj, Krishna	Elephant, fish, Cattle, tortoise, Horse, Bull, Peacock, tortoise	Tiny Jewellery Tribal standing man, tribal women holding fish etc.	Measuring pots, Lamp	Ranchi, New Delhi, USA, UK

Raw Materials and Tools

The artisans of the Dhokra craft used the following raw materials and tools for the production of Dhokra artifacts. The

important raw materials and tool equipment are mentioned in the following table ((Mukharjee 2016; Katiyar) ^[24]

Table 2: The raw material and tools and its description

Raw Material and Tools	Description
Water	This is used for removing the clay
Brass	It is one of the core substances.
Wax threads	The beeswax is made from honeybees to prepare thin wax thread.
Charcoal	A black mineral substance which used in furnaces as a fuel.
Brass scrap	Brass scrap
Bitumen	It locally called "Daamar" or "Koltar".
Cow dung	This is mixed with Mud to make the model
Wood	Used for firing purposes
Clay	Used for making mould.
Sand	This is mixed with clay
Tin	A soft silver-white metal mixed with copper
Zinc	A bluish-white metal mixed with copper
Nickel	A hard silver-white metal
Fuel	Fuel is used to fire the furnace and produce heat
Resin	A solid substance of plant
File	It is used for polishing purposes.
Big Sized Brush	This is used for dusting and cleaning of the clay particles.
Furnace	It is used for melting the metal and baking the clay mould.
Graphite container (kui)	Melting pot
Hammer	It is used for removing the clay mould
Hacksaw	It is used for cutting out the extras of the metal product
Anvil	It is a heavy iron block with flat top and concave sides on which metal can be hammered and shaped. This is a cutting tool.
Pincer	This is used to pinch, cut, or pull an object

Technique

There are several techniques involved in the making of the Dhokra artifacts. The technique of metal casting (Mukharjee 2016; Katiyar) ^[24] involves the following stages

Core-making: The first process is the making clay model. The mould is locally called "Chhancha". A clay core or mould is prepared roughly smaller size than the final cast image. It is dried under the sun for solid piece.

Modeling: In this stage the surface of core is covered by a layer of wax thread and design is given to the core model.

Moulding: In this process a thin layer of fine clay mixture of clay and cow dung is carefully coated on the wax model. It takes the negative form of the wax on the inside. Further, it is left for to dry and harden. Then once again a layer of clay applied to the mould. A channel (tube) is created in mould for drain the liquid wax and filled molten metal.

De-waxing: The complete dry mould is pre-heated in a furnace to melt and the molten wax is poured down for re-use.

The wax is drained out of the channel and create a cavity of exact size and shape inside the mould.

Casting: To follow the above process the molten metal (Brass) is poured into the cavity through the channel. The mould is left to cool. The object is completely made inside the mould.

Polishing and Finishing: This is the last process; the mould is broken to release the cast and the finished artifact, which is removed and mechanical buffing/marching is done to for a smooth and shiny appearance of the metal object.

Dhokra Motifs

Based on the requirement and function, the traditional Dhokra motifs are categorized into the following heads such as Ritual motifs, Motifs of daily household artifacts and decorative motifs (Katiyar n.a.) as shown in a Flow chart given below

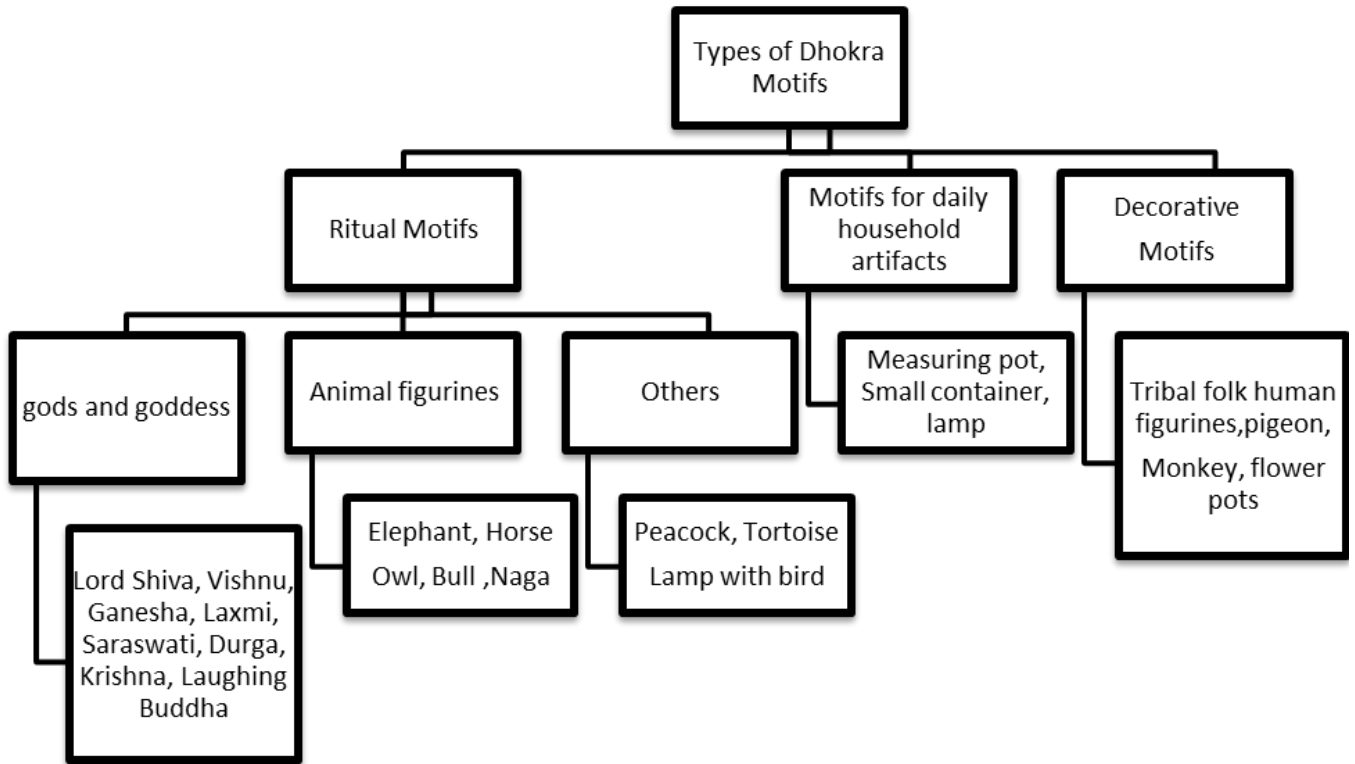


Fig 2: The types of Dhokra motifs



Fig 3: Maana (measuring pot) of Odisha



Fig 4: Elephant of Bankura, West Bengal



Fig 5: Dhokra of Telangana



Fig 6: Nandi of Odisha



Fig 7: Dhokra craft Telangana



Fig 8: Horse Bankura



Fig 9: Sitting statue of couple Chhattisgarh



Fig 10: Lord Ganesh and Goddess Laxmi



Fig 11: Tribal Motifs of Telangana



Fig 12: Lord Krishna

Symbols and Legends in Dokra

The subject matter of Dokra art is from two great epics- Mahabharatta and Ramayan and some symbols from Indian culture. The figures like Krishna, Shiva, Natraja, Ganesha, hanuman, Durga, Lakshmi, Saraswati, Radha with Krishna and many others are taken from Brahmanic literature. The Buddhist and Jaina images are also given due importance.

Buddha figure is found in various Mudras such as Dhyana Mudra, Bhumisparsh mudra etc., Besides this art has many type of themes covering th human life such as Instrumental and dancing figures in groups (Dhapli, Tabla. Mridangam, Bansuri and Turahi etc. Many Sculptures depicting day to day activities such as Winnowing the husk from grains, carrying some pot or similar thing over

head, carrying bottle gourd or pumpkin in hand or on the head, pregnant woman, woman with children, couple figurines etc.

Some Important Symbols are discussed below:

- **Trident:** A spear with three points abstract representation of Shiva
- **Sun:** It is considered as a deity since Early Vedic age. It symbolizes light and truth.
- **Snakes:** It is symbol of rebirth as it leaves its skin and regain new skin after a certain period.
- **Nataraja:** Symbolizes Shiva in multiple role such as creator preserver and destroyer. It represents cosmic cycle which never ends. Besides this also depicts anger of Shiva as in the legend of Kamdev and Rati.
- **Peacock:** It symbolises Krishna as the feathers of it adorns his crown. It is also associated with Kartikeya (Son of Shiva) as his vehicle. It is believed to bring good luck and prosperity. It is associated with Lakshmi, deity of wealth.
- **Cow:** It is the most auspicious animal among all. Since early Vedic period, the cows were sought after for humans. It symbolizes motherhood, prosperity, and purity. It is depicted with lord Krishna with Gopies in paintings as well as in sculptures.
- **Bull:** It is one of the most ancient symbols found in Mesolithic rock paintings. The bull figurines in Neolithic Mehrgarh, later in Harappan Civilization and it has continued through the ages. Even today a festival called *Pura Amavasya* is celebrated in different cities of Western Odisha. It is known as a symbol of fertility cult.
- **Horse:** This animal is mentioned in Later Vedic literature in context of a yajna called Aswamedha which was done by the ruler to become a Chakravartin. Even before that Harappan Civilization has some evidence of the existence of horse.
- **Elephant:** A majestic animal symbolizes Buddha, Ganesha as well as it is related to Vishnavite religion.

Conclusion

Here are a few points which occurred to the researchers during this research is given below:

- **Timeless Appeal:** Dokra craft with rustic beauty and intricate detailing, continues to enchant the art loving people across the globe, reflecting the timeless of traditional handmade art. It is a testament to India's ancient artistry with roots tracing back to 4000 yrs. It's technique and designs remain relevant thus cherished today.
- **Dokra Craft' Connection:** Dokra sculptures mostly depict the characters of Sanskrit literature and from two great epics.
- **Eco Friendly Craftsmanship:** Entirely eco-friendly using sustainable materials like bee wax, clay and metal scraps, making it a symbol of sustainable artistry.
- **Cultural Heritage:** Each sculpture of of dokra is a narrative of India's age old tradition. It represents the rich cultural tradition of indigenous communities especially in states like West Bengal, Jharkhand, Chhattisgarh and Bihar.
- **Global Recognition:** Over the years, dokra has gained international recognition for its uniqueness, becoming a popular choice in global art and decor markets.
- **A Bridge between Past and Present:** This craft connects modern art lovers with the ancient art lovers with the ancient world, offering a glimpse into Indian history and culture through its handicraft.

Concluding with a request to the Government to ensure the survival and growth of dokra craft, it must take proactive measures to support artisans through financial assistance, skill development programs and the creation of dedicated marketing platforms. Policies must aim at promoting dokra as an Eco friendly and culturally significant art form can enhance its visibility globally. Strengthening infrastructure, offering fair pricing and integrating dokra into tourism. These initiatives could help in preserving the Indian heritage as well as empowering artisan communities.

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