

RESEARCH ARTICLE

The Ethnographic Narration of Gadulia Lohar Tribe of Udaipur, Rajasthan: With the Special Reference to the Ethnoarchaeological Perspective and Traditional Iron Tool Technology

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The *Gadulias* are known by different names in regions, like: *Gadulia Lohar* in Rajasthan, Madhya Pradesh and Delhi, *Gaddi Lohar* in Maharashtra, *Bhuvariya* in Uttar Pradesh and *Bhubalia Lohar* in Haryana. In Rajasthan the *Gadulia Lohar* are locally called as *Dhurkutia*. They claim Rajput origin and Chittorgarh as their ancestral home. This article is a documentation of the Gadulia Lohar's lifestyle, their iron-tool making technology and dress and ornamentation. Ethnographic data grouped with archaeological evidence from Iron Age of this region has also been dealt to understand the mobility pattern of this particular tribe.

Introduction

Mobility and settlement are the two material consequences of human behaviour. Sheena Panja (1996) states that no community is sedentary and they have their individual patterns of mobility. Mobility is not only limited with pastoralism, but mobility can also mean different ways of human movement. In case of nomadic communities, the mobility or migration is considered as an important part of their life movement. Therefore, mobility is multidimensional having influence on the culture and the society.

There are a few ethnological studies on the *Gadulia Lohars*. Satyapal (1968) conducted fieldwork on the *Gadulia Lohar* of Rajasthan during the years 1959 to 1964. The result of his study has come out that there is slightly difference among the tribal communities that had been earlier studied by Misra (1977). In his study, he has given more specific detail on religious aspects mostly related to ceremonies and festivals of the *Gadulia Lohars*. P.K. Misra (1975, 1977) has studied *Gadulia Lohar's* history, consequent movement patterns and also discusses their iron working technology. The *Gadulia Lohars* themselves claim that the Chittaurgarh, a famous fort in Rajasthan, was their home and used to make iron tools for the king of Chittaurgarh. In 1568 A.D. they fled from the fort when the Mughals took over.

The present work is mainly concentrated on social changes that have been observed from the living pattern of the Gadulia Lohars within the last 20 to 30 years. The

research was undertaken keeping the following aims in mind- first to document the traditional knowledge system of iron tool making and iron objects made by the *Gadulia Lohars* of Udaipur, Rajasthan; second to understand their mobility pattern, social organization and ritualistic belief systems; third to document lifestyle, and dress and ornamentation in general; and forth to understand ethnographic data in the light of reported archaeological data (Iron Age) of the region. Ethnographic field survey was conducted by using systematic methods like interviewing individuals and groups, case studies, and photographic documentation. Village to village surveys were done in order to set mapping temporary settlements. Secondary sources of data are including relevant anthropological and archaeological literatures. Special focus is given on their mobility patterns, exchange and interaction with other communities in various places.

Gadulia Lohars: Settlement and Mobility Pattern

Over time, *Gadulia Lohars* originally from the state of Rajasthan have scattered all over India now. Presently they inhabit the neighbouring states such as, Uttar Pradesh, Madhya Pradesh, Haryana, Maharashtra, Punjab, Gujarat, Delhi (Singh 1998). They are variously known in different states; for example, in Madhya Pradesh and Delhi they are called as *Gadia Lohar*, in Maharashtra they are known as *Gaddi Lohar* while in Uttar Pradesh they are *Bhuvariya*. In Haryana they are called as *Bhubalia Lohar* and in Rajasthan itself they are known as *Gadulia Lohar* or *Dhurkutia* (Singh, 1998). In the same region, they get different titles depending upon their movements and location, such as: *Maliwi Gadulia Lohar*, *Chittori Gadulia Lohar*, *Mewar Gadulia Lohar* and *Malwa Gadulia Lohar* (Misra 1975).

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Their mother tongue is Indo-Aryan language, called *Mewari*, but many of them are conversant with Hindi as well. The Devanagari script is used for writing (Rahela 1975). The literary meaning of *Gadulia* is 'bullock cart' and *Loha* means 'iron'. *Gadulia Lohar* means black-smith too (Singh 1998). They are able to work on and make any object out of any type of metal.

In order to know their origin, one needs to turn over the pages of the history. As they narrated to the author, the story starts in centre of the district of Chittorgarh. The ancient town of Chittorgarh used to be the capital of Mewar and the kingdom of King Sisodia Rajput. The town of Chittorgarh is situated on the bank of river Gambhiri. The town is on a hill and has a huge fort. The Mughal rulers first attacked this town in the year 1303 A.D. and then the attacks continued. The Rajputs defended the fort strongly, until the Mughal army finally captured it in 1568 A.D. The very same groups, which are known as the *Gadulia Lohar*, left Chittor at the time when it fell to the Mughal. On the entrance of the Chittorgarh fort, it is written that the *Rajput* and *Gadi Lohars* before leaving the fort swore an oath that until Chittor is liberated, they will follow a very simple lifestyle. They took following vows: *Not to go up to the fort, Not to live in a house, Not to sleep on a bed (cot), Not to use lamps (light), Not to use ropes for drawing water from wells* (Misra 1977). They adopted a very simple life style, used bullock carts and moved from place to place. For nearly 400 years they followed their vows and remained faithful to them.

There are some folk tales that narrate their glorious past and each member of the community is proud to talk about them. Misra (1977), is of the opinion that the ancestry detail is not mentioned clearly. In fact, the *Gadulia Lohars* told the same story of them being Rajputs but incidentally, the Rajputs do not accept the statement. They admit to having lived together on the fort but claim that the *Gadulia Lohars* worked for them and they were never a part of the Rajput clan. In fact some of their practices are contrary to those of Rajputs. For example the *Gadulia Lohars* accept widow remarriages, they do not wear any sacred thread and they do not follow the custom of bride price (Misra, 1977).

The *Gadulia Lohars* are always on the move and they use only bullock carts for transport. All their belongings are in the cart and they consider the cart as their real home. They do construct tents on the roadside when they stay at a place. Traditionally in the early days each family had three carts but in recent times the number has gone down, generally less than three and sometimes two or three families share the same cart.

In permanent settlements they construct mud or brick houses with proper roof. This is because of the economic changes coming to this nomadic group. When they settle at a place for more than six months they generally make low walls of mud bricks and then construct the roof of shack or of plastic covering. When they live at a place for less than six months they do not construct any walls but they use the plastic sheet for roof, supported by wooden poles. They also have tents when they do not live at a place



Fig. 1: Gadulia Lohar Settlement at Vallabnagar village, Udaipur district (site 1).

more than a week. Those families, which go from village to village in two or three days, do not construct any shelter but they live below the cart itself (Misra 1977).

The settlements of Gaduli Lohar

Eight settlements of the *Gadulia Lohars* have been surveyed in Udaipur, Rajasthan, which are termed here as Site.

Site 1: Gadulia Lohar Settlement at Vallabnagar village, Udaipur district

This Gadulia Lohar settlement (**Fig. 1**) is located on the left side of the road across the water pool. The site comprises of only the cart and the working area, the reason being high mobility. The cooking hearth is present next to the cart. The cart was parked between the village houses near the road.

Site 2: Gadulia Lohar Settlement at Dholekaipathi village, Udaipur district

This *Gadulia Lohar* settlement is a permanent settlement. The houses are built for year round occupation. Most of the *Lohars* in this village have settled here since the last fifteen years. The workshop is always located outside and just in front of the entrance to the house. The houses generally have three rooms and a bathroom inside. The family cooks on the terraced rooftop and not in the kitchen. (**Fig. 2**).

Site 3: Abandoned Gadulia Lohar Settlement at Chirwa village, Udaipur district

This was an abandoned Gadulia Lohar settlement. They had already left for a new destination as the farming land had been exhausted. No material evidence could be observed except patches of burning area.

Site 4: Gadulia Lohar Settlement at Hiranmagri road, Udaipur

This small settlement consisting of one family was located along the Hiranmagri road. The settlement is an open-air settlement. The belongings were kept on the cart and the cooking hearth and resting area closer to it. The working



Fig. 2: Interview with Gadulia Lohar in Dholekaipathi village, Udaipur district (Site 2).

area was within a few meters from the cart. This family seems to move frequently but as informed the author that they were living in this site for some years. But the laying out in open air without tents or other living material and other markers of permanency was not visible here. This observation was strengthened when the locals informed us that this approach of permanency is new as to avail government facility. The villagers informed that these Gadulia lohar visit this place every six months.

Site 5: Gadulia Lohar Settlement at Ahar road, Udaipur

This Gadulia Lohar settlement is comparatively larger, located along the Ahar road. Four families occupied this settlement for last six months. These families are close relatives. Four tents were installed and the locations of the hearths and workshop were outside the tents. With four families two cooking hearths and two workshops were observed. A little further ahead, there were permanent houses of the Gadulia Lohars. These families are living here for some years and are close relatives. In this settlement five permanent brick houses and two workshops were observed.

Site 6: Gadulia Lohar Settlement at Fatehpura circle, Udaipur

This Gadulia Lohar settlement is located at Fatehpura circle near Pratapnagar in Udaipur. This was an open-air settlement with two temporary structures made of metal

sheets. Two families reside here with two carts which used for transportation.

These Gadulia Lohar have two bulls at the settlement as well. These bulls are sometimes sold for cash, and when they decide to move they purchase new bulls. There is no clear information about their movement but it seems they move very frequently.

Site 7: Gadulia Lohar Settlement at Brahmpol road, Udaipur

This Gadulia Lohar settlement is located at Brahmpol road in Udaipur. Here there is only one family unit. They have a tent, close to the workshop, while the working area is outside the tent. Near the cart, a cooking hearth was. They have also constructed a shed for keeping the bulls. They do not have a permanent house, suggesting temporary stay for some months.

Site 8: Sikkligars Settlement at Ghanta Ghar road, Udaipur

The Sikkligars are also iron toolmakers but specialize in making swords and knives. They have permanent settlement near Ghanta Ghar road in Udaipur city. They have permanent houses, and well built workshop. The workshop is not open air. They avail all modern facilities like electricity and are commercial people. (Figs. 3 and 4).

Area and the Movement

The movement of nomads differs from each other. They choose a particular route and go around the same route for year after year. They travel in a small group, known as band, which means a group of people who are related to each other and sometimes work together. They always share the income among the family even if some members have not helped in that work. As these bands do not often associate with other bands of the same tribe, certain cultural practices, customs and characters are different than each other. They adopt the methods and implement the local tools, dress, dialect, standard of living, way of life, customs, habits, ways, etc.



Fig. 3: Sikkligars workshop and shop in Ghanta ghar road, Udaipur (Site 8).



Fig. 4: Electric machinery inside the workshop, Ghanta ghar road, Udaipur.

This does not mean that they forget about their own culture or other bands of the same tribe. And sometimes for marriages, festivals or on their routes they meet other bands and revive their old customs.

The Gadulia Lohars did not mention that they move from one place to another in the aforementioned manner, but other people of the settled villages gave the information. This is said so to avail the government policy of providing money to the nomads for constructing permanent houses.

Normally, the Lohar tribal people have their simple daily habit related to preparing food, both vegetarian and non-vegetarian, for themselves as well as searching for metal tools working in the settle place. As they are traveling with cattle, their livestock are well-fed and cared for. There are some other important points of their migration like searching for water resources for various purposes, the medical treatment and exchanging their tool making service for grains and fire wood from villagers.

Climate

There are three seasons in Rajasthan summer, monsoon, and winter. Summer is long and the temperature may rise to 50° C. Rainfall starts by the middle of July and continues through entire August and September. From November to March is winter.

The climate controls the movement of the nomads. In fact, the change of climate has given an indirect effect to other parts of their agricultural works like the change of crop harvesting cycle make Lohar getting different kinds

of metal tools orders or finding the new place for their cattle. They sustain their lives by getting or exchanging their service with small amount of cash and grains for daily consumption.

Their site selection mostly depends on the available of fodder for the cattle. As the result of this matter, they always prefer to keep staying longer in the place where natural source is much sufficient. During this time they also work as labourers as per the requirement of the villagers, if possible, so that they can generate some income.

Generally, when the Lohar settle down in selected place, they build the shelters or huts for themselves as well as their animals. Later on, they will start acquiring any kinds of iron making work from the villagers. When the working demands is going down or out of interests, the Lohar would prefer to shift from this village to the others in search of other work.

The annual life of Gadulia Lohar

The Gadulia Lohar always organise themselves as according to the seasons.

This is the main period of major work. From middle of March to the end of May is low season that not having much orders. If they do not get enough income, they will probably sell their bullocks. In the earlier days they used to engage themselves in socializing and ensuing the followings by coming together with other bands (Misra 1977), renew their social ties, negotiate and dealing with family matters, settle outstanding disputes, socialize with members of unknown, isolated groups of the tribe, some small blacksmithing work or trading of bullocks which are brought to them by villagers, meeting relatives or friends, etc. But nowadays they generally remain close to related clans and engage themselves in social ceremonies and marriages. They do some small work brought to them by the villagers. They are no longer join other tribe for discussion and bonding purposes. The whole month of June, they remain busy in their work and trade. Instead of cash they prefer to take food grain and fodder in payment for the monsoon period, which comes on July.

During July, August, and September, the band members again meet with the others, as they know that after monsoon, everyone will be busy for seven to eight months and there will be to no chance to meet each other. During this time they invite and accept invitation for meals, showing their unity and strong relationship. So, it happens that familial visits are always arranged during this time. Later on, from late September to the end of February, they do blacksmithing work.

Middle November to beginning of February is the best time for iron making service but not conducive for bullock trading. During summer season, it becomes too hot and unbearable especially for iron working because of the combined heat of sun and that of furnace.

The Family life of the Gadulia Lohar community

In a family unit there are following family members: Husband, Wife, Children, their joint family members including grandmother and grandfather. The structure of family is neither rigid nor a general structure of the

family. Their laws or religion do not make any deal with family matters.

Their characters, behaviour and reactions have ever changed. They do not follow a certain law established on any divine or legal framework. So their decisions are purely based on reactions to the experiences, awareness, learning and outcome of their environment that they stay and that also subjected to error.

Within a region, The Gadulia Lohars are divided into a number of bands, each one of them has its own way to go and in some points interact with other clan. Each one of them is divided into clans, branches, and households. Till 1980 the Gadulia Lohar had nine branches, i.e. Sisodia, Chauhan, Solanki, Pawar, Parihar, Rathor, Dabi, Sankia, and Balbunk. In the present study area at Udaipur, all the Gadulia Lohars interviewed are from the Chauhan branch.

There are four kinds of bonds among Gadulia Lohars such as by patrilineal, matrilineal, kinship, and friendship. Among all, the friendship bond is the most influenced that sometimes it replaces the other three bonds (Satyapal 1968).

Food and Diet

They are both non-vegetarians and vegetarians. They generally cook rice, roti, daal and vegetables but whenever possible they cook non-vegetarian food. They eat pork along with chicken and meat. But they rarely or never cook beef. The cooking is done the house. They use the U-shaped *chulha* made of mud. They use wood for cooking. The cooking utensils are wheel made pottery. The dishes and pots are all of clay. Now in present days they sometimes use metal pots. The settled families however have all metal utensils.

Religion

The Gadulia Lohars are Hindus. Their deities are Kalkamata, Sitalamata and Ramdev. There is a temple of Kalkamata in Chittorgarh. They keep photographs of the deities in house for worshipping and also their kings (Fig. 5).

The dress and ornaments

The groups of Gadulia Lohar, who are constantly moving, have more of their traditional ways and always wear the traditional dress but those who have settled or move after long intervals, wear the traditional dress only during ceremonies. Otherwise they wear the normal Rajasthani dresses as other people. The young generation and children do not wear traditional dress. Married men and women only wear it (Figs. 6 and 7)

The Gadulia Lohar wears many kinds of ornaments. Both men and women like to wear different kinds of them. Normally, these ornaments are made of gold, silver and sometimes of copper metals, while thread, beads and ivory are also used. The men wear earrings, generally in one ear but sometimes also in both. They have bangles and rings. They wear metal rings in their ankles. The women wear earrings, bangles, necklaces and rings. Their bangles are made of ivory and rarely of glass. The anklets are of copper. The necklaces are made of gold and silver. The women wear bangles on their arm too, right from the shoulder



Fig. 5: Photographs of Gods shown by a man in Hiranmagri.



Fig. 6: Gadulia Lohar women dressed for ceremony in Hiranmagri Road.

the bangles were made of ivory in early days but now they wear mostly plastic imitations. The colour is white.

They carry Rudraksha mala and sometimes the pendants are made of Rudraksha too. The different kinds of lockets or pendants used by them are named differently, such as *chandirapin*, *chintmataki patri*, *Chur siddh ki Patri*, etc. *Hansali* is a kind of ornamented and decorated ring of metal, which is opened on one side wearing by women on special occasions.

Women wear pendant like ornament (*bor*) in between the hair partition and tie it to the hair for support. This pendant is tied to a thread. They also have metallic waistband. The women wear nose ornament. This is called as



Fig. 7: Dress of a male in mobile Gadulia Lohar family in Hiranmagri Road.

nath. It is sometimes small and sometimes large. It can be like a ring or even like an ornamented plate.

Now a day they do not wear all kinds of ornaments even if they go for ceremony. They wear only ornaments made of plastic and glass. They also sell the ornaments these days to tourists and to the commercial shopkeepers.

Iron Working-the Main Occupation of Gadulia Lohar

Iron working is the most important and basic unit of the Gadulia Lohar production. In contrary to other professions of other communities, this type of job involves the entire family. The beauty and strange fact in this type of work is that, at the same time, the earnings belong to and are divided among the entire family members. The production unit consists of the following people of Gadulia Lohar family.

Basically for a normal assignment four people are required according to the capacity and necessity of the work to be done. A person to manipulate the mechanical bellows, they usually choose an elderly person or small children for this work. A person to hammer, hammering and beating the iron needs a young adult man or woman who has learnt this work from childhood. The foreman, the operator, mostly, the father of the house has to take a piece of iron with a pair of long tongs on an anvil for forging. So by continuous application of differing pressure of hammer, the iron gets sharp. Other people of the family even if not directly involved in the iron working also do

other small works, by helping the smiths. For instance, there are the girls of the family do cleaning, cooking, gathering firewood, babysitting, washing, in return they earn cash money.

The boys go out to find job in other villages, or advertising their job profile of iron working, animal husbandry, shopping and marketing. They help other family members while guarding, fetching water, repairing household goods for others. The elders in the family travel for selling, buying, dealing, negotiating, supervising, counselling, sharpening tools, and sometimes the children also accompany them. The women folk in their free time prepare smoked food, dry food, knitting, stitching, and decorating the house, inviting guests and relatives and sometimes also the villagers for a friendly meeting. They do planning for moving from one village to another. All these works are necessary for the success of black smithy and are indirectly related to iron working.

The Gadulia Lohars need to keep a fire burning while they are working. They heat the iron before beating it to remove the impurities from it and it is also needed to be hot for sharpening the tools. Sources of energy for their work in the furnace are; Cow dung cakes, Firewood, Coal, Charcoal, Petrol or diesel. The people in the villages and cities usually bring a piece of iron to be mended or prepared, and also provide coal or wood for burning and heating purpose. In the past when there was need to bring iron ore from the wilderness the Gadulia Lohar used to go out for searching the ore and would bring it back to purify and make new tools. Rajasthan is one of the richest states for iron ore in India.

Tools types made by the Gadulia Lohars are including *Pharias* (Plough blade), *Kulharis* (Axe blades of various sizes), *Basulas* (Adzes), *Kussis* (Blades for weeding implement), *Kurchas* (Cooking implement), *Chinpiyas* (Small pinners for extracting thorns) *Nahinis* (Used for paring nails).

Technique of Iron Working Among Gadulia Lohars

Forging is the technique used by most of the Lohars. In these present days, they heat the piece of iron till it becomes red and then beat it with the hammer to bring it to the desired shape. They work in team as a family unit while making tools. They make ploughshare, weeding implement, and axe. Their work area is outside their huts where, they carry out repair work.

Tools used by Gadulia Lohar for Iron Working

Hammers (**Fig. 8**)

Gripping tools

Char (poker)

Bellow (**Fig. 9**)

Anvil (**Fig. 10**)

Small Metal Tubs (**Fig. 11**)

Preparation of Raw Material

The preparation of iron is done in two stages; First, refining and improving the quality of iron by repeated heating and hammering, and secondly by moulding the metal into the desired shape.



Fig. 8: *Hathora* (Hammer), Hiranmagri road.



Fig. 9: Handle bellows use by the Gadulia Lohar, Hiranmagri road.

Traditionally a T-shaped pit was made in the ground, which was 25 cm long, with the horizontal side 15 cm long and 15 cm deep. Firewood or charcoal is piled over the horizontal side and then the fire comes from the bellows. The bellows, which are made out of the metal pipe, are placed next to the fire. Now days they do not make any T-shaped pits. The pits are round and shallow and the mechanical bellows are used (**Fig. 12**).

The working team required for any major job is of four to five persons. The procedure is as follows:

There has to be one belloweer. Belloweer can be an old person or a child, as it does not need much strength. The traditional bellows is now no longer in use extensively, but the mechanical one is in use, probably because it is easy to carry and also may be because of smaller family units.

Another person is needed to be the main person to produce the principal work; he directs hammering in traditional way. He holds the object by a pair of pincers; this needs an expert person, no woman has ever been found doing this job (**Fig. 13**)

Two or three people are required for hammering. As a matter of fact everyone in the family knows how to use the hammer. The way the holding person and hammering person work, the tool is made (**Fig. 14**). The Gadulia Lohars work outside the camp near or between their huts or tents. Many times the working area is just in front of the door. There may be any work it is done outside the camp. Hence all could share the work and all are benefited by work.

The repair work is one of the most demanded jobs by local people. In spite of the availability of latest machines, they always keep on getting repair work done because the machines cannot repair some particular tools. Otherwise, the villagers have to buy new tools which are more expensive. Though the machines work is available, the Lohars still keep repairing work throughout the year.

Sharpening of various tools is on top of the list. The tools made by machines are not as strong as those hand made by the Gadulia Lohars. In the earlier days they used to make larger tools and also the wheels for carts, which were very decorative, and now they do not make such kinds of tools as they have mostly lost the skills.



Fig.10: Anvil, Hiranmagri road.

Trade in Bullocks

Being blacksmith is not the only profession for the Gadulia Lohar. As another economic source of subsistence is trade in bullocks. But, selling bullocks is not a common business among all the Gadulia Lohars, as they do not possess bulls in large numbers.

Now a day, one family has one or two bullocks only. And they generally keep them for the carts. In the past the bullock trading was done when there was not enough iron working. Now some of the families have completely left the iron working profession and are involved in the trade of bullocks. But those who still do the black smithy are not involved in this type of trade.

In a regular settlement, they have a separate shed for cattle. This shed is generally on one side of the residential huts or some distance away. As they have their working area in front of the hut, they generally do not have the cowsheds in front of the houses.

The ethnographic study of Gadulia Lohar tribe is not only to give the light on the living pattern of particular iron



Fig. 11: Water vessel, Hiranmagri road.

making group, but this work also provides the valuable information regarding to the typological and comparative sources of iron making technique which had been started from Megalithic period in Rajasthan. To fulfil the goal of this ethnographical study, the detail of archaeological evidence related to the development of iron making in North India should be concerned for better understanding in comparative study of modern and ancient technology.

Archaeological Evidences of Iron Age Sites in Rajasthan

In South Asia, the Iron Age bridges the gap between the Bronze Age and Early Historic periods. The iron technology played an important role along with other factors such as socio-political institutions in the development of Second Urbanization in the Ganga doab (Agrawal and Kharakwal 2003). The use of iron minerals started during the third Millennium B.C. in Anatolia (Wertime and Muhly 1980). The Megalithic, Painted Grey ware, and Gandhar Grey Ware Cultures represent the Iron Age cultures in South Asia.

We have meagre evidences about the early stages in the development of iron technology in South Asia. The iron technology might have developed at different periods independently in different geographic regions. Copper and iron metallurgy might have played crucial role in the formation of the First and Second Urbanization in South Asia. But it is not clear about who introduced the iron technology in South Asia, as the site of Pirak has yielded iron tools in the upper levels. The proto-historic cultures



Fig. 12: Pit, Hiranmagri road.



Fig. 13: An old Gadulia man working with iron, variety of other iron tools are also visible, Ahar road.

of Malwa region also yielded iron tools in the upper levels. It is generally considered that iron was introduced in India in the beginning of 1st Millennium B.C. But scholars like Chakrabarti proposed that iron was introduced in India much earlier than the 1st Millennium B.C. (Chakrabarti 1992).



Fig. 14: A women hammering and the head man of family holding the iron on anvil, Hiranmagri road.

The scholars like Prakash and Tripathi have divided the Iron Age cultures into five cultural zones. They are Zone A- North-western India including Baluchistan, Zone B- Painted Grey ware of North India, Zone C- Black-and-red ware cultures of Eastern India, Zone D- Megalithic cultures of Central India and Zone E- Megalithic cultures of Peninsular India (Prakash and Tripathi 1986).

Chakrabarti (1992) also identified six early iron-using cultures in the Indian Subcontinent. They are Baluchistan- the northwestern area, Indo-Ganga divide and the Upper Ganga valley, Eastern India, Malwa and Berar in Central India and the Megalithic cultures of South India.

A large number of Iron ore deposits are in Rajasthan at various places such as Alwar, Udaipur, Jaipur, Ajmer, Bharatpur, Bundi, Jodhpur and Kota. A number of Archaeological site in Rajasthan have reported Iron slags and Iron objects in their assemblage. The famous Chalcolithic site Ahar is located on a stream of the same name and now Ahar is a part of the Udaipur city (Misra 1967: Hooja 1988). In the 1952–53 and 1953–54 season it was first excavated by Agrawal of the Department of Archaeology and Museums, Government of Rajasthan (IAR 1954–55: 14–15, IAR 1955–56: 11). Later it was excavated in 1961–62, jointly by the Deccan College and Department of Archaeology and Museums, Government of Rajasthan under the direction of late H.D. Sankalia.

In the Ahar excavation report, it is mentioned that the iron objects found belong to NBP period (Sankalia 1969.). However, the re-examination made by M.D.N.

Sahi suggests that the association of Iron object at Ahar actually goes back to Protohistoric phase. His argument is based on the stratigraphic occurrence of iron objects. The stratigraphic position of the illustrated objects in the excavation report, out of 25 iron objects, as many as 10 were recovered from the layers which have been classified as belonging to period Ic and two objects- were from those layers which have been classified as belonging to Ib of Protohistoric period at Ahar. The C 14 dates available from period Ic has given a date of 1270 B.C and 1550 B.C. Thus, according to Sahi "...the introduction of Iron at the site may well go up to the beginning of the 16th century B.C., if not earlier..." (Sahi 1979).

However, V. Tripathi (1976) does not agree with Shai's argument on the basis of the nature of the site. She argues that as the site already was disturbed as indicated by the excavator by mentioning many pits at the site. So, according to V. Tripathi some of the Iron objects found from the Protohistoric phase may be an accidental one because of the disturbance at the site, and hence, may not be criteria for dating purpose. On the other hand D.K. Chakrabarti fully supports the M.D.N. Sahi on the ground of his interpretation of Nagda sequence of Iron bearing strata (Chakrabarti 1992).

Another important excavated site is Balathal, which has yielded two cultural phases. A deposit of 1.5 meter of Iron Age was found in the excavations at Balathal. This deposit is found overlying on the Chalcolithic deposit. These deposits were found in the central part of the mound, which is spread in an area of 70 sq. m. The Iron Age deposit found at Balathal is directly resting on a 15–20 cm thick deposit of ash layer and this deposit is characterized by the presence of Red ware, fine Grey ware and few potsherds of Northern Black Polished ware and fragments of Grey ware. The shapes of fine Grey ware found at Balathal are similar to those of the Painted Grey ware dishes. Large number of iron objects (**Fig. 15**) such as adzes, nails, clamps, rods, lumps, daggers, blades, swords, bell, arrowheads, rings, sockets, animal figures, hoes, chisels, knives, sickles, are reported from the Early Historic deposit. This deposit is dated between 300 B.C. and 200 A.D. Many of these iron objects are in corroded condition and they are encrusted with soil.

The site of Balathal is located in the Aravalli Ranges. The Aravalli Ranges are known for rich deposits of iron ores. Many ancient mining and smelting localities were found in this region. They are found at Karanpur, Kikawas, Chhipikhera, Iswal, Nathara-Ki-Pal, Devgarh and Lohariya.

The site of Iswal is located 20 km north of Udaipur has yielded evidences of furnaces, bellows, large quantity of iron slag and habitation deposit of structures made of stone, potsherds of Red and Grey wares. The site Iswal was excavated by Lalit Pandey of Institute of Rajasthan Studies, Rajasthan Vidyapeeth, Udaipur. The iron smelting furnaces found at Iswal were made of burnt bricks and stone slabs. This structure is dated to 2nd century B.C. The base portion of another furnace contains iron slags and cinder (Agarwal and Kharakwal 2003).



Fig. 15: Iron sickles from Balathal Site (Misra 2007).

The geological, archaeological and ethnographic studies have revealed that iron ore deposits were found in many regions in India. According to Chakrabarti iron technology was started due to the availability of iron ore in large quantities (Chakrabarti 1977: 168–171). Some of the sites in Rajasthan like Jodhpura, Bairath and Anguchha are located near the source regions of iron ore and have yielded evidences of smelting. At Jodhpura and Anguchha fragments of crucibles, ore and slags were found. Good quality of iron ore is found in the Aravalli ranges at places such as Bania-Ka-Bas, Morija and Rampura. These source regions are located in the eastern margin of the Aravalli ranges and the above-mentioned source areas are also located close to the Jodhpura site.

Rajasthan probably played an important role in production of Iron, as the ore is easily available in the Aravalli and adjoining areas. From the archaeological record it is clear that during Historical time Rajasthan was surely a place of large-scale iron production. Occurrence of iron object at Noh (Painted Grey Ware) and Ahar, however, suggest a pre 1st millennium B.C date for Iron in Rajasthan or India.

Discussion

This recent research on the nomadic tribe called the Gadulia Lohar has brought up some results, which are listed below. There has been a few earlier works on the Gadulia Lohars, latest being in the 1980s. The last twenty-eight years have brought many changes in the life ways, customs and occupation of the Gadulia Lohars.

The Gadulia Lohars have a very interesting mobility pattern. As earlier workers have pointed out they are not true nomads any longer. Many of them have permanently settled at places. Many more do not move for some years and when they move it is because of professional competition or because the land where they were settled has been taken away from them. There remain very few families,

who still very frequently move and maintain the traditional life ways. The mobility is ceasing very fast and they prefer to stay at one place as like other settled Lohars. Even when they move, these days they do not travel for long distances. They go only to nearby villages. On the whole they prefer to live in one village and go out to other village for work during the day and come back by the evening.

Despite their changed mobility pattern the Gadulia Lohars largely maintain their work strategies. They still make the same kinds of tools as studied by earlier workers. Although there are some changes, as they no more use the traditional animal skin bellow, instead they use a mechanical bellow, which is easy to use and more efficient. They do not use the instruments as chisel and lever.

As their tradition tells, they still do not make swords. They do not make any war tools as they once used to make for the king. But unfortunately they have lost the skill to make heavy, larger and much-ornamented items as cart-wheels or decorative dagger handles by now. Now days they only make small tools and largely based on repairing the tools. This earns them very meagre income as compared to making the tools. They are fast losing the variability among their tool types. The Gadulia Lohars depend entirely upon the settled villagers for their livelihood.

Presently, the Gadulia Lohars do not go out to search for the metal for making the tools. The customer supplies the raw material and fuel needed. Hence, the quality of their work largely depends upon the metal provided by the customer.

They have left behind many of their vows. They climb up the Chittorgarh. They use electricity and also bed. They are changing fast and becoming more and more like the general rural people. Their uniqueness is slowly diminishing but this is true for their life ways only not the quality or type of work they master in.

The families are becoming nuclear with the younger generations are settling down in villages, only the old persons carry on with movement largely. Among the long settled families also there are different houses for different generations. In some families, the children go to schools, which were almost forbidden earlier. The Gadulia Lohars have abandoned their traditional symbol, the cart. And many no longer keep any cattle and hire bullocks when they need for movement arises.

The Gadulia Lohars do not have the annual gatherings as earlier. They do not have the meetings with the elders in which earlier the norms were revised and news would be exchanged. More and more individuality among the families was observed.

They have given up on many of their traditional jewellery. And do not wear much of gold or silver ornaments these days but prefer glass or plastic instead. The ivory ornaments are completely lost. The scores of ivory bangles worn by a married woman have given way to light and cheaper plastic bangles. These changes are observed among the nomadic families too. The settled families have adapted to the modern clothes, and do not possess the traditional clothes for festivals either.

This recent study has put forth the many changing aspects among the Gadulia Lohars. And one more such

aspect is the origin of Sikkligars. These are also traditional Lohars but this branch was formed when the Gadulia Lohars stopped making the swords and knives. The Sikkligars make beautiful tools, which are mainly for decorative purposes, and the tourists buy them as showpieces. The Sikkligars have no taboos as those of the Gadulia Lohars. They are permanently settled and they are commercial workers. They do not make the agricultural tools made by Gadulia Lohars and hence they have a better economic status than the Gadulia Lohars.

The Gadulia Lohars have got caught between the conservation of their traditions and modern ways of life. They cannot balance the two situations and this results in increasing poverty among them. Government is trying to give them some help by providing money for houses but the problem has to be solved at a deeper level. Most of them do not get money, many do get the money but they use it for other purposes and keep on moving from time to time. On occasions the villagers deny their stay and do not let them have land. All these problems are adding to their poverty and some firm decisions should be made to help them by the Government.

A number of Iron Age sites are located near to the Gadulia Lohar settlements studied in Rajasthan. The sites like Ahar, Balathal and Iswal are some examples, which have yielded various types of iron tool assemblage.

Further research on locating highly mobile Gadulia Lohars who annually visit to far of places and regions in Gujarat, Madhya Pradesh, Punjab, Haryana, Delhi and Parts of Rajasthan will certainly help us in understanding the mobility pattern of the Gadulia Lohar in greater details.

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