SIGNIFICANCE AND DYNAMICS OF SARBLOH METAL CRAFT IN SIKHISM WITH A REFERENCE TO GHARUAN VILLAGE, PUNJAB

Thesis Submitted for the Award of the Degree of

DOCTOR OF PHILOSOPHY

in

History

By

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DEDICATION

I dedicate my thesis to my parents, Mrs. Beant Kaur, and Mr. Gurditta Singh,for their endless love, support, and encouragement throughout my pursuit ofeducation. I hope this achievement will fulfil the dream they imagined for me.

DECLARATION

I, hereby declared that the presented work in the thesis entitled **"SIGNIFICANCE AND DYNAMICS OF SARBLOH METAL CRAFT IN SIKHISM WITH A REFERENCE TO GHARUAN VILLAGE, PUNJAB"** in fulfilment of degree of **Doctor of Philosophy (Ph. D.)**is outcome of research work carried out by me under the supervision of **Dr. Tabish Hashmi (27292), working** as **Associate Professor, in the Department of History** of Lovely Professional University, Punjab, India. In keeping with general practice of reporting scientific observations, due acknowledgements have been made whenever work described here has beenbased on findings of another investigator. This work has not been submitted in part or full to any other University or Institute for the award of any degree.

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CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled **"SIGNIFICANCE AND DYNAMICS OF SARBLOH METAL CRAFT IN SIKHISM WITH A REFERENCE TO GHARUAN VILLAGE, PUNJAB"** submitted in fulfilment of the requirement for the awardof degree of **Doctor of Philosophy (Ph.D.) in the Department of History**, is a research workcarried out by **Gurtek Singh, (12021093)** is bonafide record of his/her original work carried out under my supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

Name of supervisor: Dr. Tabish Hashmi

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ABSTRACT

This thesis undertakes an academic exploration and inquiry into the multifaceted dimensions of metal craft, with a specific focus on the traditional craft of Sarbloh in Punjab and its adjoining regions. Chapter 1 of the thesis comprises with the introduction and the in-depth study of the metal craft including the historical perspective, the commercial aspects, and the technological advancements. Other aspects related to metal craft, such as social identity of craftand the life of Craftsman Down the Ages, have also been discussed. A brief history of metal crafts in Punjab is discussed in the following section of this chapter. Sarbloh, a metal craft thathas been used mostly in Punjab and some other states of North India, is also discussed and analysed. In addition to this, the present research methodology and research objectives are alsothe part of this chapter. Chapter 2 delves in examining the dynamics and importance of SarblohMetal Craft in Sikhism. This chapter conducts a meticulous analysis of Sarbloh metals and metal crafts in India, or in the particular region where the suggested survey research has been undertaken, has been given in order to thoroughly investigate the current topic. This chapter covers several topics with the same objective in mind: the history of Gharuan Town, the background of Gharuan Ironsmiths, the use of metal goods, the significance of metal crafts andSarbloh in Sikhism, and an overview of metal and metal crafts in Punjab and metal industries in Punjab.

In Chapter- 3 discusses the importance of Sarbloh metal in a life of user. About the same, a metal report for the same has been given. With that, the historical prospects of iron metal havealso been discussed about different religions, including Hinduism, Sikhism, Islam, and Christianity. This chapter has further discussed the benefits of using iron utensils in day-to-daylife. Subsequently, this chapter 4 has given detailed information on the usual way of using metal craft techniques and further explores the traditional and modern ways of Sarbloh metal crafting.

Hammering and casting, embossing, chasing, and inlaying are some traditional waysof making metal crafts. Further, The latest tools and raw materials for Sarbloh utensil craftingand products with details of the Sarbloh metal craft that has been produced in Gharuan, along with images, have been given in this chapter. A well-developed and all integrated market system is also an important aspect of metal craft production and use. The same is also true forthe Sarbloh, hence it has also been included in this chapter. Finally, the survey details for this work have been given. Moreover, this study offers a comprehensive analysis of the tools, rawmaterials, and production process integral to Sarbloh utensil crafting, complemented by visual aids and an examination of market dynamics. This holistic approach not only illuminates the technical aspects of craft production but also highlights the economic and social dynamics shaping the metal craft industry. Towards conclusion, the thesis encapsulates the findings insights bring together from the conducted study, confirming the enduring significance of metalcraft, particularly within the context of Sarbloh, as a testament to cultural heritage and contemporary relevance. Through its interdisciplinary approach and comprehensive analysis, this thesis contributes to a deeper appreciation of the rich tapestry of metal craft traditions andtheir enduring legacy in contemporary society.

GRAPHICAL ABSTRACT

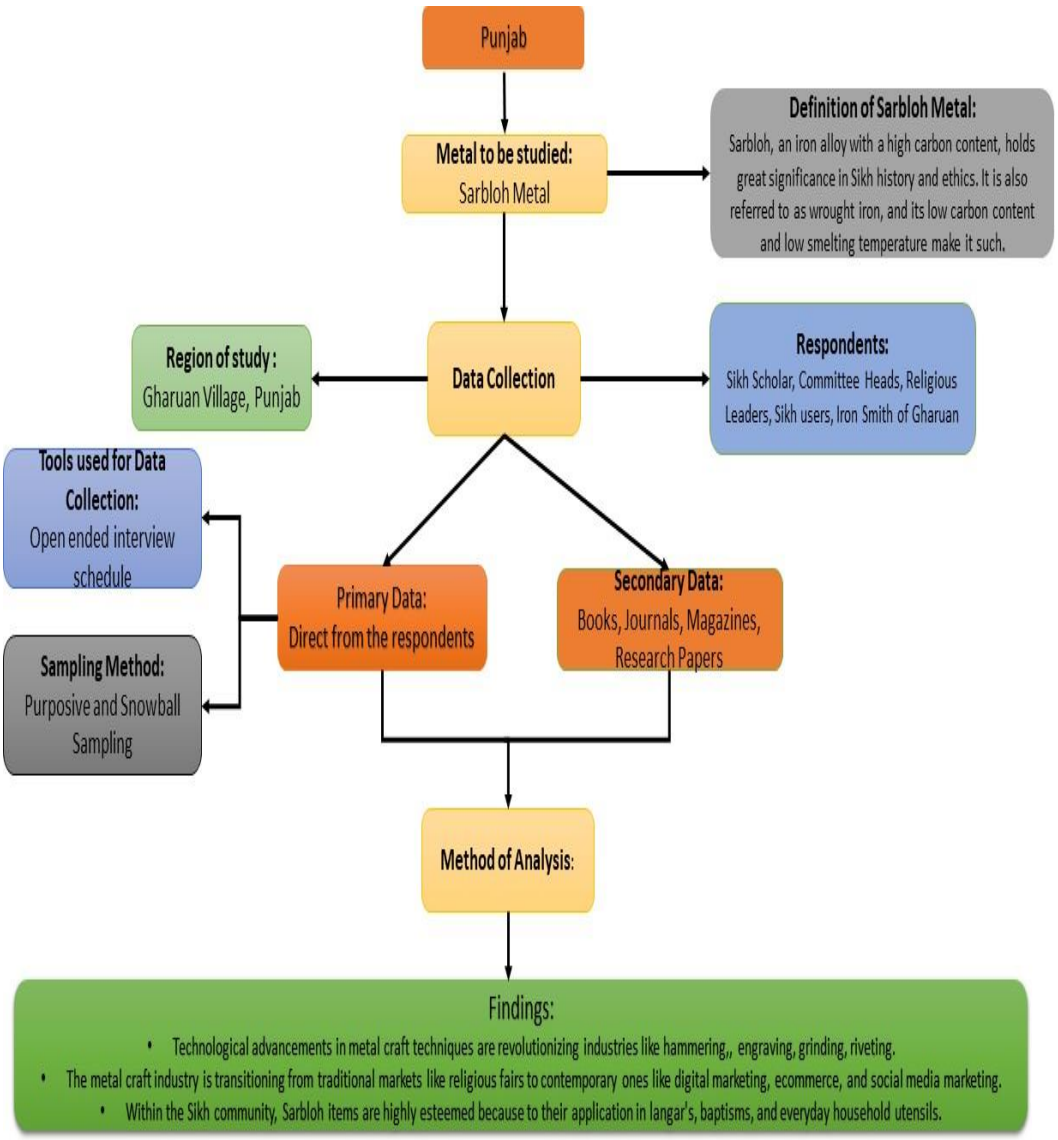

Fig: Graphical representation of the study

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The work presented in this thesis entitled **"SIGNIFICANCE AND DYNAMICS OF SARBLOH METAL CRAFT IN SIKHISM WITH A REFERENCE TO GHARUAN VILLAGE, PUNJAB**" would not have been possible without my close association with manypeople who were always there when I needed them the most. I take this opportunity to acknowledge them and extend my sincere gratitude for helping me make this Ph.D. thesis a possibility. Firstly, I would like to express my sincere gratitude to my supervisor, **Dr Tabish Hashmi** Associate Professor, for their continuous support of my PhD study and related research and their patience, motivation, and immense knowledge. Their guidance helped me throughout theresearch and writing of this thesis. I could not have imagined having better supervisors and mentors for my PhD study. Their constant guidance, cooperation, and support have always keptme going. I owe a lot of gratitude to them for always being there for me, and I feel privileged to have been associated with a person like them during my life. I would also like to thank and express my heartfelt gratitude to **Dr. Pavitar Parkash Singh**, HOS, School of Education, for their constant motivation and support during my thesis. I sincerely thank all the colleagues of the Department of History for their support and help. I would also like to thank the University for giving me this great opportunity I feel proud to be part of such an excellent institution. Above all, I owe it all to Almighty God for granting me the wisdom, health, and strength to undertake this research and enabling me to its completion.

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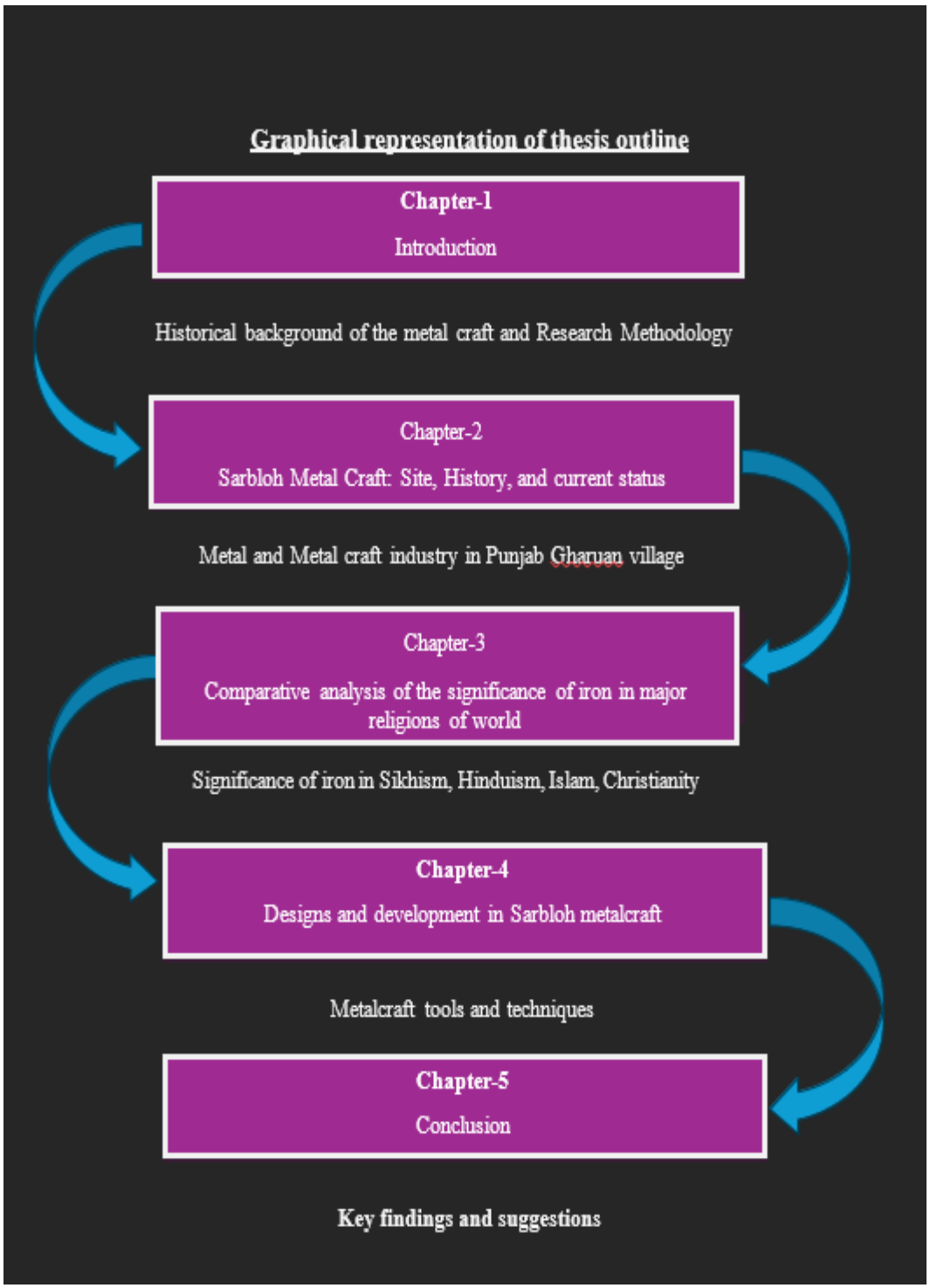
Graphical representation of thesis outline
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CHAPTER- 1

CHAPTER 1

INTRODUCTION

1.1 Background

Change has always been the key to innovations and adaptability for individuals, groups of people, and entire communities. Although there is a continuous interaction continuum between the artist or craftsman and the customer of the arts, still there has been a significant gap in our knowledge of these shifting systems of creativity and production. For a long, research has focused on figuring out the push and pull variables that significantly altered peoples' fortunes and quality of life. When one observes the whole transformation that a people made when they changed from one sort of livelihood, lifestyle, or way of life, one can see these paradigm changes throughout history. Therefore, a paradigm shift is thought to occur when a nomad settles or when a deeply embedded cultural entity changes its course to become something completely new. This situation raises issues about the circumstances under which a metal crafts artist became a craftsman, and a craftsman became a factory worker. A few of the concerns associated with it have been listed below.

- What factors led to the formation of guilds among craft workers, and how did guilds evolve into modern unions?
- What social and economic dynamics led to workers losing control of their work?

Even though these are some of the more complicated concerns that may be attempted to be answered in part throughout the research process, it is the more specific nature of the issues that may be revealed via the history and ethnography of a people. This is another reason why the study effort depends heavily on secondary data gathering from earlier studies that have been done on similar systems of production transformation and even complete changeover of these vocations. This study project examines how the structures and relationships have changed over time, and it entailed a thorough investigation of the organizations that mostly controlled the means of production. As a result, this was the nature of trade and distribution; the altered

circumstances relating to the altered nature of the sources and markets, as well as the altered circumstances governing the compensation for the labour of the craftsmen.

1.2 Historical Perspective of Metal Crafts

History shows that copper originated in the West among Amri peasant communities. They had travelled into the valley of the Indus around 2800 BC. They succeeded the primarily Mesolithic people, whose remains were recovered at many locations, including Jung Shahi Hill, Ganjar Takar, and Jherruck. The copper equipment of these people comprised artifacts in the form of just about a few pins and chisels. Around 2600 B.C. there was the initiation of a people in the Indian subcontinent who established the Harappan Culture. They probably came by sea routes and left behind them a large range of equipment in copper and bronze.

This established the fact that this could only have been possible if they already had a functionally practical knowledge of metallurgy. Further waves of prospective settlers from Asia Minor, especially Iran, followed them to northern India. The settlements of these people had a collection of weapons of copper and bronze pertaining to the Middle Bronze Age type. They were to intermingle at later stages with those who had probably been Aryans. Copper tools and weapons are found in many places in northern India, but the use of this metal has not been observed to have penetrated into the Southern territories till much later.

The working of gold at an early period had also led several scholars to suppose that gold working had been the forerunner of the art of metallurgy, and probably because gold might have been worked at a very early period in India, it was widely considered that metallurgy may have originated in India. Neither the available archaeological evidence nor the processes of gold working give any such credence to this idea. It is not assuredly evident that the Harappans may have derived their gold through any specific process or how they may have come across the gold they were using for various purposes. In all probability, it must have come from Arabia or certain provinces of India. It has been established, however, that Arabian bullion was being imported into North-Western India as late as the Kushan period (Warmington, E. H. 1928; Gordon, D. H. 1950). There is a considerable amount of evidence that shows that gold-bearing quartz outcrops in Mysore were mined as early as the megalithic individuals who lived there. These people could have come originally from South Arabia, making it possible for the researcher to account for their knowledge of extracting gold. On the other hand, among the

ancient sources of gold were the Dardic Ant gold and the alluvial gold of Bihar, which in all probability was the oldest source of gold in India. The aforementioned makes it clear that, concerning the present-day regions of India and Pakistan, the expansion of the use of metals such as bronze and copper in addition to the emergence of the use of iron occurred during a hazy period about which scant information is known (Gordon, D. H. 1950).

1.3 Definitions of Handicrafts

India has been a major producer of handicrafts, and a major source of employment has given many people jobs. It serves as the sole source of income for many rural manufacturing firms and artisans. Researchers have studied numerous facets of this topic of crafts and craft societies, but their viewpoints have never been the same. Between individuals and between researchers, even the nomenclature appears to vary. They are artisans for some, craftsmen for others, and representatives of small or rural industries for many. Similarly to that, there is not a single agreed-upon definition of what constitutes handicrafts. However, several organizations have tried to characterize these works of creativity and human hands. Here are a few of these definitions: Items manufactured by hand, frequently with the use of rudimentary instruments, and typically aesthetic and/or traditional were described in 1989 by the office of the Development Commissioner of Handicrafts (DCH) in a way that was both accurate and practical. They consist of decorative and functional items (Govt. of India 1989).

Liebl, M., & Roy, T. (2003) made another attempt to define the crafts. They flipped the definition of handicrafts issued by the DCH in 1989 and discussed them in the following way: ‘Handicrafts’ are products made using:

1) The use of manual labor requires minimum machine input.
2) High level of competence or expertise.
3) Strong tradition and long-term survival.

1.4 Commercial Aspects of Metal Crafts

Over the years, a variety of manually made metal goods have been described in various ways and even referred to as handicrafts. Although different accounting methods have been used, the commercial nature of these items has generally been a significant component of the rural industrial economy. Crafts are at the forefront of the cultural industries and have their roots in

centuries-old customs that are continually recreated by each generation. It is well known that artisans across the world do more than only preserve cultural heritage; they also enrich and transform it to meet the demands of modern society. Scholars highlight the secondary employment potential of rural handicrafts, supply of basic needs, redistribution, foreign exchange contribution, and special importance for rural women, as well as their role in sustainable livelihoods (ILO .1984; Townson, I. M. 1995; Kirsten, M., & Rogerson, C. M. 2002). Along with the strengthening of flexible production systems in the developing world, there has occurred a revival of certain rural handicrafts, and this too in the form of home-based leisure time activity (Townson, I. M. 1995). The majority of the research on the global dimensions of metal crafts has called attention to the primary obstacles and obstructions to the growth of service and salary prospects for urban families intricate in craft manufacturing (Allal, M., & Chuta, E. 1982; ILO 1995; Kirsten, M., & Rogerson, C. M. 2002).

Therefore, traditional crafts reflect the creativity, culture, and legacy of the craftspeople who may work on them individually or as a whole community. These handcrafted items, whether made for decorative or practical purposes, were a priceless form of cultural expression and an important element of the material history of a certain socio-ecological niche. This is the rural industry capital, which is especially important in the developing countries. The handicrafts have been defined differently by various agencies ranging from UNESCO to the district-level offices that deal with the crafts persons on an everyday basis.

In India, there is the Ministry of Textiles that houses the Department of Handicrafts. The Department has several subunits spread over the country. There is also a district-level office that looks after the commercial welfare of the artisans working at the level of the villages. This is the office that is headed by the General Manager, of District Industries. The significant contribution of the handicrafts has been recognized at the apex levels. This is one of the reasons for re-emphasizing the value of handmade products among many of the developed countries where the quality of life is usually exposed to several threats at the behest of the unmitigated, widespread, and unchecked excessive industrial (Robinson, M., & Picard, D. 2006). Another well-known craft in Punjab is Metalcraft. The widespread usage of metal things in daily life forced the development of numerous goods and methods. Metal crafters of Amritsar are renowned for their expertise in a variety of casting, soldering, and decorative techniques

including repousse, pierced work, chasing, engraving, etc. Certain of the goods on which these artisans work include metal pots and utensils, instruments like lamps and trumpets required for religious rites, as well as some ornamental pieces like lampshades. The most impressive of all of these things are the intricately etched panels and engraved metal doors found in temples and gurudwaras. These metal doors occasionally have very beautiful repousse work done to them and are plated with gold and silver.

1.5 Technological Advancements and Crafts

Anthropology, sociology, economics, cultural and urban geography, human ecology, environmental psychology, and a variety of other behavioural science disciplines have studied recent and contemporary societies. The gradual development of technology was a response of man to the immediate environment as it enabled him to cope with it. Gradually the material culture increased in quantity, sometimes in a planned and many times in an unplanned manner. This had its side effects, which were not entirely unexpected. It seems that change often comes as a result of coping with the unanticipated consequences of planned behaviours (Kramrisch, S. 1958; Rathje, W. L. 1981; Basu, P. 2020). Moving southwards from India, a gradual movement towards greater industrialization. However, there is very little information if any available on the various consequences and how the crafts persons adapted to them. There is a sizable amount of literature on the mechanization of the Indian industry, but it focuses either on the national growth of Western-style firms or on the individual efforts of managing agencies to promote industry. The traditional economic and social functional unit of the village, the village, is under threat by the loss of revenue from handicrafts and artisan labor rather than industrialization. The tiny regional handicraft sector in this province has severely suffered from the negative effects of industrialization.

Three fundamental factors made it feasible for this to happen:

- It created a class of wage-earning labourers who were promised steady incomes as compared to the uncertainty of the income from working on handicrafts.
- Increased potential of operations as compared to the size and intensity of the existing handicraft production.
- It emphasized specialization in all aspects of the crafts ranging from weaving to embroidery and others. The competition was too much. On the one hand, was the

factory with its well-oiled machinery-like functioning and higher volumes of productivity, and on the other was the struggling individual or an entire family desiring the entire process from procurement to sales all by themselves with access to very meagre resources.

It is yet unknown how deeply this paradigm changes in economic organization and socio-economic rearrangement, and in some cases, entire rejuvenation will affect a community's structure and functioning, the family, the religious system, and other parts of culture. More study on the issue is necessary in light of this. One unmistakable result of industrialization is the extremely visible decline of the handcraft industry, and in cases where the manufacturing and the crafts are in direct conflict, the extinction of the crafts completely. This is most likely due to the economic dominance of the factory system over all other earlier, indigenous production methods. As can be observed in the instance of the hand-beaten copper, brass, and bronze ware metal crafts made by the Jandiala Guru, the transition from handcraft to industrial production results in the loss of age-old technical abilities. This community is on the verge of a paradigm transition, much like many of the craftspeople who came before it in time and many who will come after it in time and space due to the threat of a complete breakdown of production processes.

1.6 Crafts and Social Identity

The group or community that is involved in the creation and selling of any given handcraft typically receives a whole new meaning thanks to crafts. However, it is known that when making a piece of handicraft, a precise shape must be created while constantly maintaining a particular purpose, vision, or objective attention. Crafting is a fundamental individual commotion that inspires action focused on design. Making handicrafts appears to be regarded as one of the most fundamental human behaviours. It is almost as essential as using tools for obtaining, preparing, transporting, processing, and storing food. Additionally, it has been utilized to create shelter and armour (Costin, C. L., & Hagstrum, M. B. 1995). The basic tenet that the production of a craft is the embodiment of an image for social identity being a sign of the social constructions category in many countries has been expanded by several researchers. The importance of the productive activities that have been identified as craft production has been the subject of studies, which have also shown that these activities help foster social

interactions (Ibid). Since the beginning of time, anthropologists and other academics have been curious about how the division of labor relates to gender, and the structure of production (Brown, J. 1970; Murdock, G. P., & Provost, C. 1973; Burton, M. L., Brudner, L. A., & White, D. R. 1977); and other factors (Peacock, D. P. 1982; Costin, C. L., & Hagstrum, M. B. 1995; Costin, C. L. 1986).

However, the explanation of the production organizations has rarely explicitly considered the social identity of the employees (Zagarell et al., 1986; Wright, R. 1996; McCorriston, J. 1997). While it is obvious that the artisans make themselves as objects through the crafting process, a vast network of relationships is profoundly loaded with meanings of social and cultural value. To comprehend the entire intent, meaning, and social ramifications of the works of artisans, many art historians have recognized the significance of identity and the social circumstances of an artist from which they originate e.g., (Williams, D. 1983; Gunter, A. C. 1990). It might be argued that artists have unique sets of experiences to which they give body and form using their creativity and dynamism, a social identity, and a life environment that shapes their worldview, the form and substance of their work, and the customers for whom they create. The thoughts and vision of the craftspeople are only formally realized as a reflection of the individuality of the artisans or the whole artisan community (Costin, C. L., & Hagstrum, M. B. 1995).

1.6.1 Languishing and Dwindling Crafts Presence

Modern life, driven by mechanization and mass media, has led to the decline of languishing crafts, which are known but no longer visible in arts and crafts. Examples include Chamba Rumal in Himachal Pradesh, Bell metal work in Madhya Pradesh, Batik printing in Goa, Thanka paintings in Sikkim and Himachal Pradesh, Dhokra craft in Andhra Pradesh, Thewa art in Madhya Pradesh, and straw pictures in Kerala. Five-Year Plans of the government of India aim to preserve and revive languishing crafts through measures like design development, training, pilot products, exhibition, and publicity. This scheme was introduced during the 8th Five-Year Plan and has been refined in the 12th Plan, favouring artisan clusters across the country. Throughout the eighteenth and nineteenth centuries, artisans' control over the work process, skill dilution, and task simplification were threatened by economic and social changes. Thus, it is possible to argue that the middle class emerged in the workshop rather than the

factory. However, what was the contribution of craftsmen to the labour movement? Could the craftsman, along with the broader class of workers, emerge as the major force behind the new movement? The scattered distribution of resources in tropical areas, the increase in the size and complexity of communities, and the demands of trade occasioned the rise of rural manufacturing industries like blacksmithing, pottery, etc., all increased the craft specialization, and the presence of formal markets in the more populous settlements. A movement was observed from self-sufficient communities to networks engaged, in varying degrees, in an inter and intra-ethnic trade of subsistence and non-subsistence goods like metal craft, pottery, textiles, gold ornaments, and woodcraft (Palmer, B. D. 1976). Among the crafts communities, the household functioned as an essentially self-sufficient production unit.

Thus, for example, the potter who was a part-time craft specialist tended to combine pottery making with agriculture or any other subsistence activities. It has been documented that by the 14th century, there were already wealthy chiefdoms in parts of the country that probably maintained them as full-time craft specialists working in central production places (Mojares, R. B. 1986). (Resnick, S. A. 1970) aimed to illustrate and clarify the economic and social processes that caused the economic shift that has transformed three Southeast Asian countries, the Philippines, and Thailand-from agrarian to commercial societies. The model used to investigate this behaviour between 1870 and 1938 emphasizes two types of labour activity in an economy based on agriculture. Before the commercial revolution, peasants relied on intensive land use for food supply and division of labour, with Z activities being solely women's province. These activities included spinning, weaving, rice processing, and providing transportation and housing. The focus was on families or villages, upheld by traditions and customs. The two main activities were agriculture (F) and non-agricultural (Z). These peasants were centred on their families or villages, ensuring a stable and self-sufficient lifestyle. The Z activities and the goods produced from those activities were interwoven with the social structure or organizations, which means the effect on one has a corresponding effect on the other. The agrarian economy connected with global markets, leading to a reallocation of work effort between exporting crops and consuming imported goods. This growth in external trade replaced traditional industries in East Asian homes and villages with Western-produced manufacturing in factories, resulting in a significant shift in work-effort allocation.

1.6.2 Craft, Identity, and the social and economic Status of the Craft Persons

According to sociologists and other scholars (Treiman, D. J. 2013; Lucie-Smith, E. 1981; Rueschemeyer, D. 1986; Nielsen, J. M. 1990) craftsmen may or may not be given credit for or achieve social standing as a result of their job as artisans. Craft makers have historically been seen as fabricators and even as the intermediaries between the items themselves and the raw materials that would later be given the honor of being crafted (Costin, C. L., & Hagstrum, M. B. 1995). Crafting was seen as more than a technical activity and something that empowered craftspeople in a way that may be incalculable since they had the ability to create. A study by (Reents-Budet, D. 1994) talked about how creating something gave it legitimacy and gave craftspeople the power to make it useful and suitable. This idea is comparable to the Andean concept of camayo, which refers to an artisan's capacity to infuse a thing with life and make it useful and practical (Lechtman, H., Henderson, J., & Netherly, P. 1993).

Despite a variety of viewpoints, (Xinwu, X., & Min, B. K. 1988) have conclusively demonstrated why cotton handicrafts of China were able to obstinately resist the large-scale machine textile industry for a longer period of time. They made the argument that small-scale peasant economies and home handicrafts in China were interwoven to the point that they could fight against the massive machine industry. Small peasants might distribute and completely use extra home labor. They could produce fabric for home use without having to worry about cost-benefit analyses, allowing them to continue their long-term fight. They used a variety of data types, including yearly output and consumption of raw cotton, annual production of native fabric by handicraft families, and consumption of various cotton-based clothing types to reach their conclusion. Between 1840 and 1936, domestic production of raw cotton increased from 8 million guandan to 13 million guandan, and both domestic and imported machine-made cloths saw rapid growth. Per capita cotton consumption increased from roughly 2.145 guanjin to 3.175 guanjin, and per capita consumption of cotton cloth increased from 1.50 bolts to 2 bolts. During this time, the use of raw cotton and cotton fabric went beyond its traditional applications in clothing and quilting to include a wide range of new fields such as medical, hygienic, military, chemical, and many others. As a result, machine-made yarn and fabric gradually replaced natural cotton and yarn in these fields.

Kathuria, S. (1986) investigated a few price and non-price elements in the trade of handicrafts internationally. Despite studies and data analysis of India, these challenges also affected the global market for handicrafts and trade obstacles more generally. To get more precise estimates of the global market for handicrafts, it is necessary to improve the classification of international trade statistics. Better data is not a goal in and of itself. This will put international trade discussions for handicrafts on a stronger foundation and enable more precise monitoring of the trade performance in this employment-intensive industry. The fundamental issue is the lack of consensus over what qualifies as a handicraft, as certain importing nations are very restrictive. As long as there is fundamental, creative, and individualized talent engaged in them, they should be able to influence people to adopt a wider perspective and accept mechanical help and mechanical equipment. Along with removing some of the obstacles, emerging nations must actively promote their products in their target markets. It got to the point that few people had the resources to engage in design and development work, despite it being essential for the survival of handicrafts in international trade. Government and the public sector therefore have to take the initiative to diversify the local and foreign markets in order to lessen the susceptibility of the craftspeople.

1.6.3 Concepts of Ethnic Identity and the Commoditization of Culture

Fredrick, B. (1969) has been a key figure in the field of anthropology, focusing on the dynamic nature of ethnicity. His work on the establishment of ethnic boundaries has led to a focus on self-identification, ethnic consciousness, and solidarity, highlighting the local construction of ethnic identity and social reproduction. This perspective examines the conditions under which ethnic solidarity emerges, whether it is a survival mechanism for political legitimacy or a way to redefine group identity in response to external cultural appropriation. Sapir (1924) and Spicer (1971) are key figures in anthropological studies of ethnicity, focusing on the oppositional process of persistent ethnic identity. Spicer's analysis of the Maya, Yaqui, and Navajo groups in Mexico and the U.S. Southwest explains this identity. However, the phenomenon of state and commercial appropriation of ethnic identity for tourism and craft production for export necessitates an amendment to the model of Spicer of opposition. Sapir distinguishes between an oppositional, internally generated culture within larger oppressive social relations and an external or spurious culture that does not build itself out of the central interests and desires of its bearers.

Diamond's (1951) work highlights the concept of genuine culture, which involves the creation of new cultural forms that combine older structures with new social and political realities. These communities have successfully directed their economic endeavours to promote individual gains, support community innovations, and strengthen non-capitalist institutions like kin and kin networks, reciprocal labour exchanges, and rituals. This strengthens local institutions and ethnic solidarity, bolstering community autonomy and the persistence of non-profit-oriented networks.

1.7 The Craft and the Craftsman (e) Down the Ages

According to (Tönnies, F. 1955) groups made up of atomized people, known as Gesellschafts, would replace gemeinschafts, or communities, founded on links that date back to the beginning of time. The idea of a craft community occurs among a group of craftspeople who share unique social structures, roles, relationships with extended families, and religious mores, customs, and rituals. Since people frequently move between different types of craft work, even when they are not employed or have stopped working in the field entirely, they do not want to identify themselves in any other way than by requesting access to resources and opportunities from initiatives for the development of crafts. The research by (De Neve, G. 2008) explores the social nature and formation of kindred relationships within a volatile, labour-intensive, private-sector enterprise, moving beyond the static theories of caste and kinship. Because crafts are viewed as fundamentally distinct from other businesses in the informal economy, these issues have received little attention in the craft industries.

The static family and community models are still being used without question, and the resurgence of the functionally integrated links that were thought to characterize traditional craft production and consumption in the pre-colonial era is instead considered the biggest obstacle. There are no workers or employers in the majority of home-based craft enterprises since the artists have no direct control over the goods and are compensated for their labour by the producers. The goods are essentially owned by the manufacturers. In the craft industries, the existence of intermediaries always resulted in exploitative relationships between those who sell the items and the artisans who make these objects. There is a tendency to victimize the creators.

How has the craftsman or artisan been impacted by the economic and social upheavals of the past centuries? What effect did it have? A variety of distinct factors influence the history of a certain skill. Depending on the uses of the product, the nature of the market demand, and the relative benefits of large-scale manufacturing, the standardization or rationalization of craft production varies. The craftsman has a substantial amount of independence and self-direction in some crafts. However, several changes can be identified, including the following:

A steady decline in the worth of human abilities. A systematic apprenticeship program and several ceremonies were associated with the practice of the art in ancient times when such abilities were valued highly. These fine abilities were replaced and diminished by market-driven technology. However, it must be remembered that any attempt to standardize the work of the artisan would be harmful to the freedom of the individual since art would then be reduced to skill, and craft would become common labour. Loss of the collective identity of craftspeople, who once belonged to a group of guilds, priesthoods, and mysteries. Craftsmen were proud of what they did and associated with what they did. The master artisan was referred to by the name "Master''. There was not a boss. Craft-based guilds cannot in any way be comparable to current labour unions. Cut the conventional bonds that connect producers and consumers. The craftsmen had previously produced for a certain group of identified consumers (especially royal and wealthy patrons, or community leaders). When a specific craft is affected by a shifting economic climate, the worker loses control over his job. Access to markets, equipment, and materials - both conventional and contemporary, and even technology inputs for skill up-grading - is restricted for the craft and the craftsman.

As a result, the craftsperson discovers that his production is devalued since it is evaluated in accordance with market-determined pay. The close relationship that existed between practicing one's skill and leading a specific way of life was broken. When talents and crafts are replaced due to increased rationality, the value system surrounding those things is also changed. The fundamental spirit in which things or utensils were developed and used has altered as a result of economic developments. In the past, economic, religious, political, and aesthetic ideals all played a beneficial role in the moral trade of goods between men and women. The Kalinga woman potter implies the wide spectrum of moral values infused in the creation, distribution, and use of commodities when she says that the pot has a spirit as well (Mojares, R. B. 1986).

The action of producing crafts is itself a component of social identity. In the minds and views of the people in the society of the artisans, crafting builds and alters the identity of the artist (Weiner, A. B. 1992; Dobres, M. A. 1995). Dobres (1995) argues that craft output serves as a persistent metaphor for social identity and a significant sign of social category due to its distinctive cultural and historical context. To recapitulate, when we approach making as a social construct, it is rich in culturally unique connotations. Liebl, M., & Roy, T. (2003) revealed that handicrafts make up a sizable and rapidly growing portion of the industrial industry. Under the free market system, crafts have benefited greatly. The rise in tourism, the global tendency toward home furnishings purchases, and the standardization of mass-produced items have all contributed to an increase in the desire for ethnic and culturally distinctive goods.

Recent export achievements demonstrate the need to dispel any notion that crafts would eventually be overtaken by modern production. They clarified why the home market had struggled despite the success of exports. Traditional purchase patterns in the domestic market have been replaced by modern consumption patterns, which have had a significant influence on such handmade items. Handicrafts and the artisans who make them are subject to several limitations and issues, such as scattered character, low educational levels, and limited access to the knowledge base. In the era of machines and the competition that results from it, the issue these historic industries confront is not one of universal unconditional obsolescence; rather, the old traditional skills and knowledge need to be looked at with certain adjustments and adaptations concerning the modern-day. Numerous instances demonstrate successful outcomes when such needs have been handled with some level of knowledge and ability.

Redzuan, M., & Aref, F. (2011) aimed to pinpoint the challenges and opportunities the handicrafts sector in Malaysia's outlying and undeveloped regions faced. They emphasized that the government's primary strategy for pursuing the goals of its new economic policy is the promotion of industrial growth in Malaysia. Despite attempts by governmental organizations, the handicraft industry plays a smaller role in offering alternative professions. As rural poverty is a concern, the rural economy and rural industrialization have been identified as viable solutions under the new economic policy. However, rural industries must be developed through a variety of methodologies and strategies, including industrial policy, agricultural policy, regional planning for infrastructure, and institutional frameworks in rural

regions. Rural industries should work hand in hand with the significant efforts and coordination among various governmental bodies for greater rural development. The importance of small businesses to the overall growth of the economy was emphasized by (Aubrey, H. G. 1951). He stated that it is undeniable that small businesses can only thrive in the long term if they can support themselves financially. Small businesses in developing nations can benefit in the near term and perhaps even sustain themselves over time. There does not appear to be much space for the argument that low capital intensity and low level of technology are justified when capital is smaller in proportion to labor since they result in savings from sources such as buildings, equipment and machines, inventories, and administrative costs.

Small businesses gain from producing high-quality goods as well as goods that are non-standard and in great demand. Small units are also adaptable; they may adjust to match the demands of the moment. Small businesses may have a strong competitive advantage in sectors that cannot be converted to high-speed continuous processes for mass manufacturing. Small-scale manufacturing has a good chance of surviving in areas with a reasonably high salary. Integration of small industry into rural life is anticipated to boost overall revenue, which will open up new markets for other industrial goods and assist rural communities in improving upon their current situation.

1.7.1 Industrialization, Capitalism, and the Decline of the Crafts

The modest, regional handicraft sector in this area has had its economic foundations severely damaged by industrialization. Following is a list of the three primary effects that the concentration of employees at machines has produced. created a class of wage labourers; expanded the capacity of the current handcraft industry. emphasized specialized weaving work rather than a guy and his family performing the complete process at the factory. However, it is undeniable that the industrialization process need not inevitably follow the course of European tradition. Probability dictates that recurrence is impossible given the size and rate at which industrialization must occur in impoverished nations if it is to occur at all. According to (Abraham, T. M. 1964), the demise of Indian handicrafts should be considered in comparison to the pre-British economic production structure of the country. Additionally, we should consider the modifications that the alien rule made to it. With the arrival of the British, India was transformed into a battleground between two production systems, each of which was the

offspring of a distinct civilization and culture rural and agricultural, the other urban and industrial. Despite being stronger, the new one was unable to completely subdue the old one. It could only lead to the opposing gradual stagnation and collapse of the system. The struggle continues today, and the forces of deterioration and decline that it brought about are still at work all throughout the nation. India had to go without both since the new system was unable to replace the old one and could only neutralize it, leading to a broad economic downturn. Crafts were thrown out from under them. When handcraft and factory output compete, one general result of industrialization is the decline in handicraft production. This can be attributed to the economic superiority of the factory system overall earlier production systems. When moving from handcraft to industrial production, there may occasionally be both a rise in technological efficiency and a loss of technical competence, as was the case with the weavers of Sholapur. The requirement for functional specificity the shift in status from assigned to attain, and the dissolution of extended kindred relationships are the most contentious essential repercussions of industrialization.

Is it inevitable that the traditional system of status, which is typically based on familial, ritual, or age criteria and its accompanying sanctions for behaviour, will be undermined or destroyed as a result of selecting industrial personnel based on skill and knowledge to perform a specific job and its functional requirements? Similar questions about the theoretical significance of changing values in industrialized villages, the need for secularization, the impersonality of social interactions, and the implications of increasing affluence still need to be researched and clarified. Studies on village industrialization that have been rigorously researched, historically regulated, and conceptually informed are evident (Nash, M. 1955). Mojares, R. B. (1986) argues that capitalism emerged in artisan production when monetary wealth enabled it to buy labour power. This led to a growth in the market, as producers had to serve the means of production, such as tools, materials, and land. Without access to these means, producers had to sell their labour for wages to sustain themselves. This differs from mercantilism, where wealth is derived from price differentials. Mojares argues that capitalism arises when wealth is used to control production, buy labour power, and put it to work. Mojares, R. B. (1986) highlights the significant impact of factory work on the status of craftsmen. The process is modified by breaking down work into essential components, allowing workers to work on part of the product instead of the entire one. This shift resulted in a loss of status for artisans.

The main differences between the artisans and the workers bring out the fact that the workers have little access to raw materials, tools, and market information. The typical worker works on components rather than whole products and, while he can generate designs, much of his work is imitation since the trend is for the large entrepreneurial firms to generate styles and samples through professional, salaried product designers. The worker produces for a distant market, has little control over the value of his product, and is increasingly dependent on work with unstable rewards because of the lack of alternatives and fallback employment.

1.8 Origin of Metal Craft from Punjab State

The name Punjab has been derived from two Persian root words, i.e. 'Punj' which means five, and 'ab' denoting waters or meaning rivers. Earlier five rivers were flowing through the undivided Punjab of the Indian sub-continent. These five rivers were the Jhelum, the Chenab, the Ravi, the Beas, and the Satluj. However, after the Partition in 1947, these rivers too were divided along with the land. With the result, neither of the Punjab territories could boast of all the five rivers. While the East region of this land remained a part of India the West side became a part of Pakistan. To differentiate between the two the researcher has designated them as Punjab (I) or the Indian Punjab and the Punjab (P) or the Pakistani Punjab. Punjab (I) is strategically placed and is an important frontier state located in the northwest region of the Indian Union. Currently, there are three rivers, namely the Jhelum, the Chenab, and the Ravi flow in Punjab (P), whereas Punjab (I) retained only two rivers namely the Beas and the Satluj (Narang, K.S.,1969). Punjab has been referred to by different names during various periods of history.

In the Vedic period or the days when the Aryans lived according to the code of conduct prescribed in the Rig Veda days, this region was at the height of its glory and was called Sap Sandhu, or the land of the seven rivers. These seven rivers were the Sindu, Vitasta (Jhelum), Asuki (Chenab), Parushni (Ravi), Vipas (Beas), Sutdru (Satluj) and Sarsuti (Saraswati), the last having dried up. After some time, when the Greeks occupied Punjab, they called it Pentopotamia and their historians recorded it as having 37 thriving commercial centers and habitats in the form of towns and cities. Centuries later, during the medieval period under the reign of Maharaja Ranjit Singh, Punjab was called the Lahore Province or the Lahore Kingdom taking its name from the capital of the kingdom.

Later with the advent of British rule, it came to be called the Province of Punjab and after Independence, the Indian portion of Punjab was called East Punjab. In the Constitution of India, it is mentioned as 'The Punjab State' (Narang, K.S.,1969). At present Punjab remains just about 14 percent of its original pre-Partition dimensions before 1947. The territory of Punjab came under incision in 1966 during the reorganization of States. From within the boundaries of the Indian Punjab were carved out the three states of Punjab, Haryana, and Himachal Pradesh (Aryan, K.C. 1983). At present Punjab is situated in northwest India. It is bordered by the state of Jammu and Kashmir in the North, Haryana in the South and southeast, Rajasthan in the southwest, Chandigarh in the East, Himachal Pradesh in the northeast, and Punjab [P] in the west. The state capital is Chandigarh (Union Territory), which is also the capital of the neighboring state of Haryana. Some of the major cities of Punjab include Amritsar, Ludhiana, Patiala, Jalandhar, Phagwara, and Mohali.

There are a total of 22 districts in the Punjab namely Amritsar, Barnala, Bathinda, Ferozepur, Fatehgarh Sahib, Faridkot, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Mohali, Mukatsar, Patiala, Pathankot, Rupnagar, Sangrur, Shaheed Bhagat Singh Nagar, Roopnagar and Tarn Taran. Historic evidence abounds regarding the settlement of the Punjab region more than 4,000 years ago. There is also evidence of Alexander the Great having reached its borders in 326 B.C. even though he may never have crossed into modern-day India. Islam reached here in the 12th century, and several towns in Punjab were important outposts of the Delhi Sultanate. In the 16th century, Sikhism, founded by Guru Nanak, began to be a major influential force in the region. The Mughal emperor, Aurangzeb, made several attempts to repress the emergent new region in the 17th century. This resulted in the Sikhs rising in revolt and taking to arms to defend themselves and their protectorates. In the early 19th century, the Sikh emperor, Maharaja Ranjit Singh, ruled over a vast empire that included most of present-day Punjab and Kashmir (Miller, S. 2012).

1.8.1 Sarbloh Metal Craft in Punjab

The emotive significance Sarbloh has for the Khalsa is another crucial factor in why Sikhs cherish it so highly. As, the Sarbloh Baata (bowl) was used in the preparation of the Khande Di Pahul (Ambrosial Nectar), which was used to initiate the Khalsa. The Khanda (Double-Edged Sword), which was also made from Sarbloh, swirled the mixture while it was being

created in the Sarbloh Baata. For many Sikhs, eating in Sarbloh means consuming the material from whence they were created. To put this in a larger context, Sri Guru Gobind Singh Ji gave the Khalsa the directive to always carry the 5 Kakaars. This was on the day the Khalsa was founded. On that day, hundreds of Sikhs were initiated into the Khalsa, but not every one of them received a set of the five Kakaars. At that time, the Sikhs already wore the Kakaars, which included Kes (Uncut Hair), Kara (Bracelet), Kanga (Comb), Kachhera (Shorts), and Kirpan (Sword). These Kakaars became the official symbols of the Khalsa identity only after the initiation of the Khalsa. In order to provide the Sikhs with a unique identity that was unrestricted by caste, race, etc., the Khalsa was intended to establish an official order. Order is king in the Khalsa.

Sarbloh use is a practice that separates Sikhs from followers of other religions and establishes the Khalsa identity. Because it encourages humility, using Sarbloh is also an excellent idea. Sikhi doctrine holds that wearing pricey metals like gold and silver is an indication of materialism. People frequently wear gold or silver because of their worth to demonstrate their status. Wearing Karas made of basic metals like Sarbloh or Steel is preferable to wearing Karas made of Gold or Silver because Sarbloh encourages a Sikh to maintain humility and abstain from the five vices because Sikhi is above all of these (Lust, Anger, Greed, Attachment, and Ego).

1.9 Research Methodology

The present research has been focused on a detailed and comprehensive study that looks into the details of various aspects related to Sarbloh metalcraft in Sikhism. For this, the chosen method of research is descriptive research. Descriptive studies frequently serve as the first investigative step into uncharted territory. Strong descriptive reporting responds to the five fundamental W questions of who, what, why, when, and where, just like newspapers. Sixthly, ‘So what? Moreover, research methods that describe the features of the factors you are researching are referred to as descriptive research. With this methodology, the emphasis is on responding to the “what’’ of the study’s topic rather than the “why.’’ Instead of concentrating on the “why,’’ the main goal of this research strategy is to characterize the characteristics of the demographic understudy. Since none of the study’s variables are affected by the research procedure, it is known as an observational research approach.

There are generally three descriptive research techniques: case study, survey, and observation. Three distinct approaches to conducting this kind of research have been described. Each technique sets the stage for a thorough study while assisting in the collection of descriptive data. For the present research, which involves conducting a comprehensive study of various aspects related to Sarbloh metalcraft in Sikhism, the techniques under descriptive research have been case study and survey. The present study has first gone through the details of metals (specifically Sarbloh), metal craft, the importance of craft, its religious benefits, etc., and also conducted a survey on ironsmiths of Gharuan village of Punjab and the user of Sarbloh utensil to test their level of attention to the various aspects available in the questionnaire of data collection. The present study characterized by a descriptive nature aims to achieve the following objectives:

1.10 Objectives

1. To study the socio-economic status of the community of ironsmiths of Gharuan.
2. To investigate the places of Sarbloh metal craft usages.
3. To understand the significance of iron in major religions of the world
4. To highlight designs, motifs, and new developments and value appreciation of Sarbloh metalcrafts.
5. To analyze the dynamics of traditional markets and the addition of new markets in view of globalization.

CHAPTER - 2

CHAPTER 2

SARBLOH METAL CRAFT: SITE, HISTORY, AND CURRENT STATUS

It has been already discussed in the previous chapter that the present research work has been focused on an investigation of the significance and dynamics of Sarbloh Metal Craft in Sikhism. To investigate the current topic in detail, it is necessary to conduct a state-of-the-art overview of metals and metal crafts in India or in the specific region in which the proposed survey study will be conducted. With the same goal in mind, this chapter includes an overview of metal and metal crafts in Punjab, Metal Industries in Punjab, the history of Gharuan Town, the background of Gharuan Ironsmiths, the utility of metal products, and the significance of metal crafts and Sarbloh in Sikhism.

2.1 Metal and Metal Crafts in Punjab

Since India gained its independence, commoditization, and industrialization arrived, and several cultural tendencies contributed to the demise of the state (Punjab and others) crafts. The crafts now have a new lease of life because of the efforts made by the government, NGOs, and designers. In addition to this, research has also been conducted to determine the organizations that are contributing to the rebirth of Punjabi crafts and how this revival is affecting artists. The improvement of skills and quality, conceptual design, training courses, raw materials, prototype production, trendy colour schemes, etc. have received the majority of these research efforts. By working together in a two-way design and product development process, designers and craftspeople are able to create a variety of cutting-edge and distinctive items from the repertoire of existing craft methods.

As a result, handcrafted modern items are reviving markets and expanding customer choice while keeping legacy status in the global period. Even if many crafts have been restored or are now being experimented with, many still require additional efforts to be revived, and the welfare and positions of artisans require more attention. Northern Indian Metalcraft has been created for more than 5000 years. Many different sorts of household products and utilitarian

things are made using alloys of white metal, copper, bronze, and bell metal, in addition to metals like copper, iron, silver, and others. The Kashmiri Ladakh region, sections of Delhi, Uttar Pradesh, Punjab, and other Northern Indian states, are well known for their wide range of metal goods. From legendary figures and god sculptures to pots, pans, cutlery, photo frames, doorknobs, taps, key chains, boxes, and more, metal craft has a wide range of applications. Craft has traditionally played an important role in culture, connecting to the past and influencing the present. This is especially true in the case of Punjab, where there is a rich historical and cultural legacy and also where talent is accorded a significant role, producing items that are symbols of Punjabi character and identity.

Hence, among all the other Indian states, Punjab has been rich enough in metal crafts. The items included in metal crafts designed in Punjab are metal doors, metal pots and utensils, instruments like lamps and trumpets, ornaments, etc. Metal utensils are used in Punjabi metal crafts for both domestic and religious rites. Amritsar is known for its metal craft workers who are skilled in a variety of welding, casting, and decorative procedures like enameling, etching, "repousse'', piercing work, and others. In Punjab, using metal items like lamps, trumpets, and lampshades has been designed as is required by religious traditions. Punjabi temples and Gurdwaras have exquisitely etched metal doors that are excellent examples of Metalcraft. In Punjab, one can find life-size metal statues of the "Nandi,'' the lion that serves as mount of Goddess Durga, the "Chhattra,'' and the" Kalashas'' of several temples. In addition to this, another look at metal craft in Punjab can be seen in traditional ornaments. Residents of Punjab display many "traditional ornaments'' at cultural events and other significant occasions, reflecting the colourful and active nature of state.

Conventional jewellery has long been a representation of status, money, and power. Antique and traditional jewellery now have a much higher value in the industrial culture of today. Due to the wealth of Punjabi people, traditional jewellery is in higher demand than contemporary jewellery. Punjab has traditionally advocated wearing heavy jewellery to special events like weddings. Producers in the state meet the demand for traditional jewellery. Goldsmiths of the state produce a variety of traditional decorations that showcase their artistic talents and imaginative imaginations. Jewelery-making is an extremely patient and diligent craft. Traditional Punjabi jewellery is in high demand not only in Punjab but also in other states. An

example of items in the traditional ornaments of Punjab is the large gold pendant, called a bala, worn by Khatri, Sikh, and Dogra men; a Nath is a big golden ring that serves as a sign for married women; a chandanhar is a piece of jewellery with manmade gemstones; a Sir Mang is a chain of gold encrusted with precious stones that a new wife wears on her forehead Karnphul, Jhumka, and Dhedu are the different types of pendants that are worn by the ladies. In Punjab, most of the metal crafts and metal utensils have been designed using brass, copper, and alloys of copper, tin, and zinc metals. The craftsman who designed the metal utensils is called *Thathera* or *Thethiya* in Punjab. *Thathera* or *Thethiyal*, the name of the artist, refers to a person who creates and fixes objects out of tin, copper, or other light metals. Their occupation completely defines their social and cultural identities, and the indigenous knowledge systems embedded in this skill have persisted through millennia.

Until the end of 1877, Thathera of Amritsar occupied the third-place spot in Punjab, exporting over 36,000 kg of metal goods as far north as modern-day Afghanistan. Amritsar was limited to trading after the 1930s, while Jandiala Guru became the centre of production. Manufacturing utensils out of pittal (brass), tamra (copper), and kansa is a part of this traditional craft (alloy of copper, tin, and zinc) in Punjab. The tools used by Thathera have both practical and ceremonial purposes while designing the metal crafts. The ancient Punjab system of medicine known as "Ayurveda'' is the source of the metal selection. The ancient Punjab book emphasizes copper's suitability for use in cooking utensils because of its therapeutic powers. Tamrapatra (copperplate), a key component in numerous medicinal operations, is effective in treating a wide range of disorders. Due to its medicinal quality, Kansa can preserve the nutritional qualities of food making it suitable for cooking.

Hence, the Metalcraft performed by Thathera had medical benefits as well. Surprisingly, women do not practice this craft. An artisan claims that this is because the work is labor-intensive and clothes get dirty as it has many steps to complete the production of metal crafts, including making the metal sheets, shaping the finished item, cleaning it with acid, and then polishing it with sand. Additionally, polishing or buffing is carried out using a motorized system and easily accessible chemicals.

2.2 Topography of Punjab

Punjab is an Indian state that is situated in the northwest of the continent. Punjab is also known as Panjab. The Persian words panj, meaning “five” and b, meaning “water” are combined to form the English word Punjab, which refers to a region with five rivers or bodies of water (the Beas, Chenab, Jhelum, Ravi, and Sutlej). The Sanskrit word panca nada, which means “five rivers” is also the name of a location recorded in the ancient epic Mahabharata, which may be the source of the derivation of the word. It is a misnomer when referring to the current Punjab state in India because only two of those rivers-the Sutlej and the Beas-lie inside its borders, and the Ravi only flows along a portion of its western border. The British Indian province of Punjab was partitioned between India and Pakistan following the partition of India in 1947. Further, on November 1, 1966, the majority of Punjab was split off to establish the new state of Haryana, giving rise to Punjab in its current shape. The combined capital of Punjab and Haryana is Chandigarh, which is part of the Chandigarh union territory. Punjab is the nineteenth largest state in India and has a total area of 50,362 sq. km, which is 1.54% of the total area of land of the nation.

The current Punjab is bordered on its north by Jammu and Kashmir, to the northeast by Himachal Pradesh state, to the south and south-east by Haryana, to the southwest by Rajasthan state, and the west by Pakistan. The only Indian state with the predominance of Sikhs is Punjab. Punjab civilization is the oldest one on the earth. It has included its distinctive language, history, cuisine, dress, script, folklore, people, etc., Sanskrit, a member of the Indo-European language family that includes Persian and Latin, is the origin of the Punjabi language except not Hindi or Urdu. Punjab has long been known for producing famous saints and warriors. Alexander attacked Punjab around 450 BC (2450 years ago) and defeated Porus, a powerful Punjabi monarch whose realm was located along the Chenab River. He refused to concede defeat and pleaded with the Greek monarch to treat him with the same deference as kings. Alexander brought him back to his kingdom. Just before passing the Beas River, Alexander went back to Greece, as he refrained from fighting. In total, Punjab has 22 districts, and every 22 districts of Punjab is governed administratively by a District Collector. A tehsildar oversees the administration of 82 tehsils that come under the district. There are 86 sub-Tehsils in Punjab.

Furthermore, Punjab has 74 cities, 143 towns, and 146 blocks. The total villages in the region are 12,581, and the blocks are made up of revenue villages. In addition to these, 143 towns and 74 cities in Punjab are overseen by 22 Zila Parishads, 159 Municipal Committees, and 23 Development Trusts. The soils of Punjab have been divided into various categories by various sources, such as grey, brown Podzolic and Forest Soils; Flood Plain or Bet Soils; Loamy Soils; Sandy Soils; Desert Soils; Kandi Soils; Sierozems; and Sodic and Saline Soils.

The climate in Punjab has been greatly influenced by the Himalayas in the north and the Thar Desert in the south and southwest. The greatest temperature of the state is between 44.2° and 44.7° C, which has been reported in June, while its minimum temperature is between 0° and 2.2° C, which was reported in December. The driest and wettest stations, Pathankot (1200 mm) and Abohar (less than 300 mm) have a mean annual rainfall of 705 mm, respectively. The average amount of rainfall in the state per year is 648.8 mm. 75% of that is taken from July to September, the monsoon season. The wettest months are July and August. The state experiences rainfall that ranges from 26 mm in the far southwest to 72 mm in the far south, and from 42 mm in the south to 13.5 mm in the north. The primary drivers of the economy of Punjab are its resources, particularly its mineral and oil resources. Minerals and energy resources, meanwhile, are in short supply in the state.

There may be petroleum and oil-bearing places. Energy and mineral supplies must be sufficient and reliable if the economy of the state is to continue expanding. Because there are no oil reserves or mines in the province of Punjab, the region is mostly reliant on hydro, thermal, and solar power. Due to the lack of energy and minerals, the agricultural resources in Punjab have been expanding dramatically, making the agro-economic sector of the state the largest in the nation. In Punjab, the industrial sector has been dominant in weaving, agricultural implements, paints and varnishes and dyes, steel re-rolling mills, automobile parts, sewing machine parts, enamelled copper wire, electrical goods, bakery machinery, cutting tools, and handicrafts, etc. The details of the industrial sector in Punjab have been given in the following section.

2.3 Industry in Punjab

The Punjab has a well-developed industrial and social infrastructure. Punjab has been a significant centre for textile-based sectors, such as yarn, ready-to-wear clothing, and hosiery, etc. More than 40% of the overall exports of the state are attributable to this industry. Additionally, Punjab is the largest exporter of rice, particularly the well-known Basmati type. Other than this, Punjab has various small and medium-scale industries that have been including automotive, chemicals, agro-based industries, food products, light engineering goods, metal and alloy products, sports goods, textiles, pharmaceuticals, and paper and paper products, which are a result of the resources, policy incentives, infrastructural facilities, and climatic conditions in the state supporting investments in such industries. Punjab has supported the industrial sector by providing Industrial Policies such as the Industrial Policy of 2009, several subsidies, economic and other incentives, as well as support for firms that have resulted in the good growth of industry in Punjab. Figure 2.1 shows the industrial growth in Punjab resulted from the policies provided.

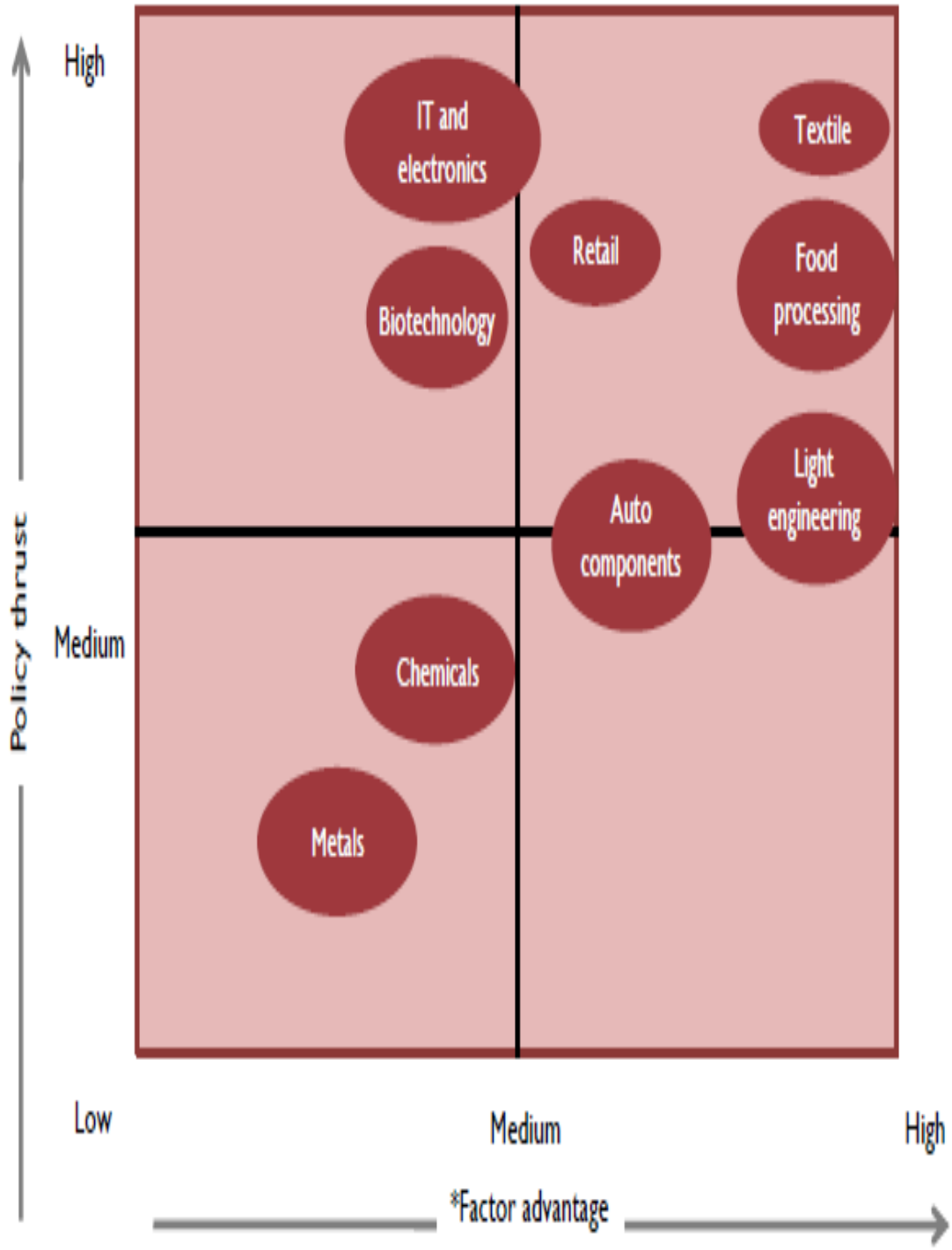


Figure 2.1: Matrix shows industry growth in Punjab (IBEF, 2010)

Industry and infrastructure development in the state is shared by the Punjab State Industrial Investment Development Corporation (PSIIDC) and the Punjab Small Industry and Export Corporation (PSIEC). The growth of agro-based enterprises is the responsibility of the Punjab Agro Industries Corporation (PAIC). District Industrial Centres (DIC) have been established by the Punjab Government as the district-level body for single-window approval of industrial projects. “Udyog Sahayak’’ has been established as the state-level nodal agency.

The creation of many special economic zones (SEZ) for IT, pharmaceuticals, biotechnology, food processing, and agro-based sectors is being supported by the Punjabi government. Other than this, The Micro, Small & Medium Enterprises Development Institute, initially called SISI, was founded in Ludhiana in 1956 to serve the former combined Punjab. The Institute currently serves the micro, small, and medium-sized business sectors in the states of Punjab and U.T. Chandigarh. It is one of the 30 institutions run by the Ministry of MSME of the Indian government and operating all over the nation. Many more supporting institutes to the industrial sector have been provided by Punjab Government including the Central Institute of Plastics Engineering & Technology, Amritsar, Electronic Test & Development Centre, Mohali, National Institute of Secondary Steel Technology, Mandl Gobindgarh, National Productivity Council, Chandigarh, central leather research institute, Jalandhar, wool grading & marketing centre, Ludhiana, institute for auto parts technology, Ludhiana, institute for machine tools technology, Batala, bicycle & sewing machine research & development centre, Ludhiana, etc. The details of the industry sector District in Punjab have been presented in Figure 2.2 below.

District	Existing Industrial Clusters
Amritsar	Power Loom Weaving, Wood & Machine Screws, Agricultural implements, Paints & Varnishes and Dyes, Electric fans, Pharmaceuticals, Printing machinery, Textiles, Chemicals, Soap, Acids, Handicraft & Traditional food items like Pickles, Papad and Sweet Meals
Barnala	Agriculture implements, Food and agro products
Bathinda	Cotton ginning and processing, Pharmaceutical and Flour mills
Fridkot	Agricultural implements, Cottonseed oil and Rice bran oil
Fatehgarh Sahib	Steel Re-rolling mills, C I Pump parts, Sewing machine parts and Truck body building.
Firozepur	Cotton Ginning & processing, Grey board, Flourmills, Agricultural implements and Millboard.
Gurdaspur	Agricultural implements, Conduit pipes, Machine tools, Soap & chemical products, C.I. castings and Brassware.
Hoshiarpur	Rosin & Turpentine oil, Paints & Varnish, Sugar, Agricultural implements, Pressure cookers, Paper, Paperboard and Handicraft.
Jalandhar	Surgical instruments, Sports Goods, Hand tools, Automobile parts, Cocks & valves, Pipe fittings, Bus body building, Leather tanneries, Ball bearings, Publishing, Switch & switch-gears and Rubber goods.
Kapurthala	Agricultural implements, Pressure cookers, Fans, Wood & Machine screws, Electrical goods, Rice Mills, Rubber goods, Bolts & Nuts and Diesel engines.
Ludhiana	Bicycles & bicycle parts, Automobile parts, Hosiery goods, Sewing machine & parts, Home appliances, Machine tools, Readymade garments, Hosiery needles, Rubber goods, Label (Metal & Cotton), Chemicals goods, Oil engines, Agricultural implements, Electronic goods, Tractor parts, Cycle tyres / tubes, Plastic goods, Hand Tools, Builders' Hardware and Fasteners.
Mansa	Agricultural implements and Cotton Spinning
Moga	Agricultural implements, Milk products and Truck body building.
Mukatsar	Cotton Yarn, Rice Bran Oil and Paper
Nawanshahar	Light Commercial Vehicles, Phamaceutical, Yarn and Sugar.
Patiala	Automobile parts, Sewing machine parts, Enamelled copper wire, Electrical goods, Bakery machinery, Cutting tools, Biscuits, Shoes and Handicraft.
Rup Nagar	Agricultural implements, Pharmaceuticals, Tractor & Parts, Electronic components and Electrical components.
S.A.S. Nagar	Information technology & Bathroom fittings.
Sangrur	Agricultural implements, Tractor parts, Cycle parts, Sewing machine parts, Milk products, Chilled Rolls and Builders' Hardware.
TarnTaran	Agricultural implements, Power looms, Rice Shelling.

Figure 2.2: District-wise industry in Punjab (MSME, 2016)

2.4 Metal and Metal Craft Industries in Punjab

As it is depicted in Figure 2.1, the growth of the metal industry in Punjab is not as expected. It is on the lowest side of the matrix shown in Figure 2.1. Not every district in Punjab is involved in the metal industry. Ludhiana and Amritsar are the two districts of Punjab involved in the metal and metal craft industries. The Punjab state in northern India has the sizable industrial city of Ludhiana and Amritsar. Amritsar had a significant role in the founding and development of the Sikh religion as well as the Indian freedom movement. The city is currently a historic urban ensemble centered around Sri Harmandir Sahib, the most important Sikh shrine as well as the historic urban fabric, which comprises the visible built heritage of Amritsar. Intangible elements include religious processions, celebrations, regional customs, and diverse traditional crafts of Amritsar. This historic district is divided between residential neighbourhoods and bazaars with a range of specialties. About 20 to 30 women labour in the byways alongside other artisans. As members of the spiritual community, the majority of them have worked to create sacred musical instruments for Gurudwaras, temples, and Akhadas, such as the narsinga and naagmani. However, these are only needed on rare occasions, but a single Thathera only produces 3-5 of these instruments per year. The only profitable handicraft at the moment is gada, which is used during an annual religious parade in October.

Most of them are occupied with manufacturing and designing for 3 months. A few of them take pride in creating pinnacles and other ornamental pieces for temples and gurudwaras, but the amount of work on these objects has also significantly decreased. Even though the majority of the younger crowd is aware of the art, they show no interest in continuing it. The workplace doubles as the marketplace of Thathera. Only pre-ordered artifacts are produced. The main cause of this is a lack of extra money. Alongside, there is a bartan selling road in Amritsar with shops selling brass and bronze utensils. However, the majority are factory-produced and come from Jagadhari while just a small number are created by Jandiala Guru. The only work that local artisans receive from these markets is little odd jobs. The only form of advertising the craftspeople use is word-of-mouth marketing. Their workshops are separated by 2-3 lanes, yet they are close together. Despite knowing one another, they are neither formally nor informally associated with jobs or social activities, but one of them mentioned meeting up during social rituals like weddings and funerals. They exclusively interact with the store owners near their outlet.

Figure 2.3: Thathera with a musical instrument "Narsingha'' (Jigyasu, 2020)

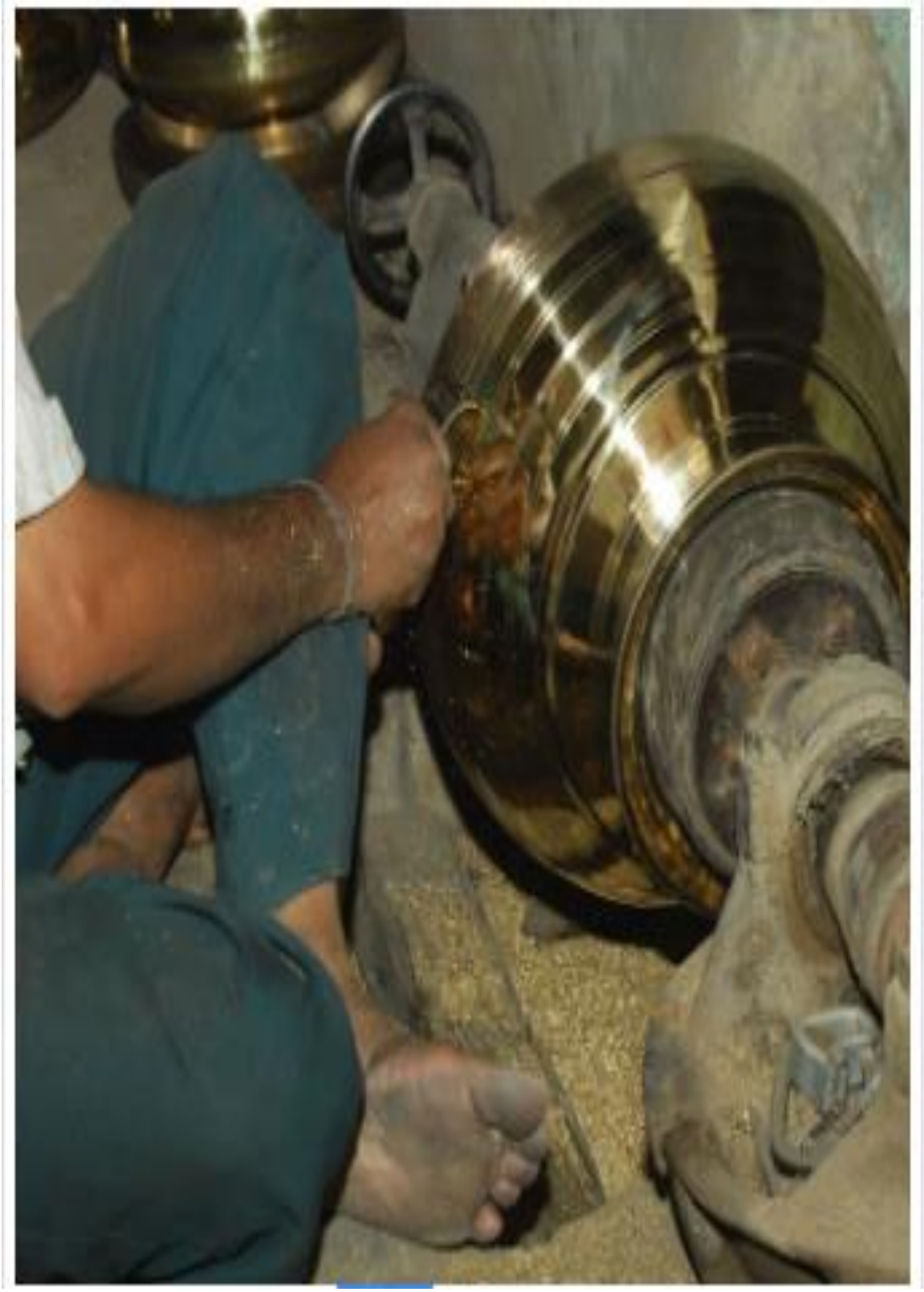
Aside from this, Jandiala Guru is another location in Punjab with a metal and metal craft industry. The emperor Maharaja Ranjit Singh, who is credited with solidifying the Sikh empire, has invited talented metal workers from Kashmir to migrate to Punjab, the centre of his realm. This led to the formation of a crafts colony at Jandiala Guru. Of this, about 25-30 families are still actively engaged in the production of utensils today at Jandiala Guru. A few workshops are located at the edge of the settlement and two lanes are entirely devoted to this trade. The primary occupation in the community is this craft. It also includes a few manufacturers that produce steel and aluminum kitchenware. The ancient method of producing brass and copper utensils in Punjab is the work of these Thatheras of Jandiala Guru. Copper, brass, and some of the alloys utilized are thought to be healthy metals.

The procedure starts with obtaining cooled metal cakes, which are then pressed into plates and beaten into curved shapes to produce the necessary small bowls, rimmed plates, enormous pots for milk and water, huge cooking vessels, and other artifacts. Precise heat control is necessary to heat the plates while hammering and shaping them into various shapes. This is accomplished by employing tiny, buried wood-fired stoves that are assisted by hand-held bellows. The manual polishing of utensils uses conventional ingredients like sand and tamarind juice. The workplaces create a typical environment of clay floors and rustic timber facades, with the metal gleaming through the shadowy spaces. Given that a significant portion of society is engaged in this, there are frequent encounters between the two sociocultural groups.

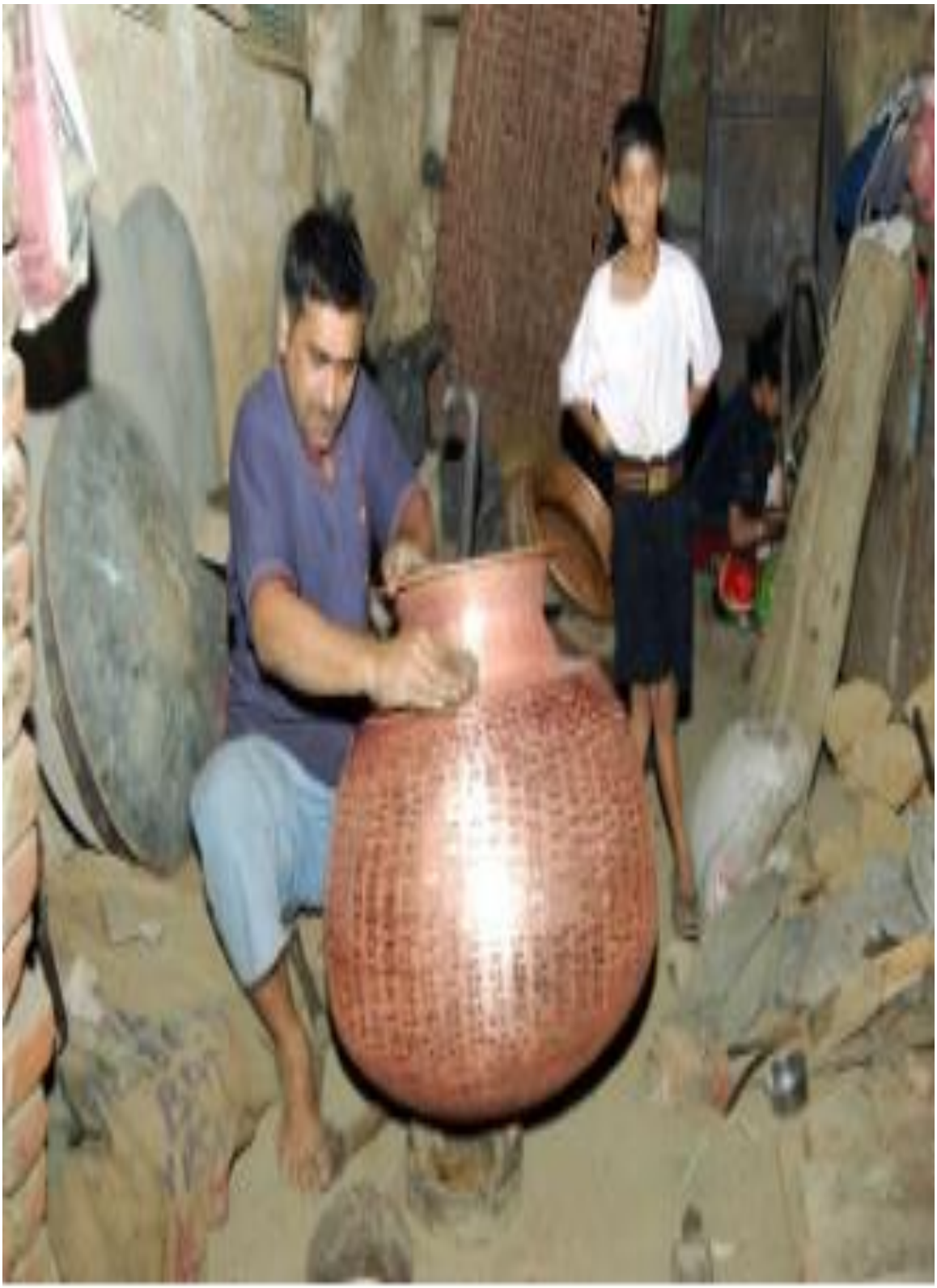
Except for one or two, who create the tabla base that is shipped to various regions of India, all of them are involved in the production of utensils. The majority of the artisans sell their wares in neighborhood stores on the major highway just beyond the alleys for a daily wage of Rs. 500-700. Only a few sell to stores in Amritsar. Though some receive the raw materials from the shopkeepers, others must purchase them in Amritsar or Jagadhari. The project has advanced in various ways. Even though only about 40% of all craftspeople are currently involved in this new endeavour, many have begun to recognize its potential. Recently, their work has appeared in exhibitions in nearby cities and a souvenir shop inside the local palace.

(a)

(b)



(c)



(d)

Figure 2.4. Utensil making at Jandiala Guru (a), (b), (c) and (d) (Thatheras of jandiala guru)

Other than these two places in Punjab, in local villages, various ironsmiths are working to design and manufacture metal utensils for domestic purposes. A few of them are also working to manufacture metal handicrafts. With the scope of the same, the present search work has conducted a survey of the smallest village in Punjab known as "Gharuan''. The following section contains detailed information about the village.

2.5 Topology and History of "Gharuan''

According to Census 2011, the location, or village code for Gharuan village is 039041. In Punjab, Gharuan village has been found in the district of Mohali or SAS Nagar. It has been located about 8 kilometers from the Kharar sub-district headquarters and 15 km from the Mohali or SAS Nagar district headquarters. According to data retrieved from 2009, Gharuan village has a gram panchayat. The total size of the village is around 1429 hectares. Gharuan has an overall population of 6,302 people, 3,324 of whom are men and 2,978 of whom are women. The literacy rate in the village of Gharuan is 74.15%, with 76.44% of men and 71.59% of women being literate. In the community of Gharuan, there are approximately 1,254 homes. The Gharuan village locality's pin code is 140413. The location map of the "Gharuan'' in India is shown in Figure 2.5.

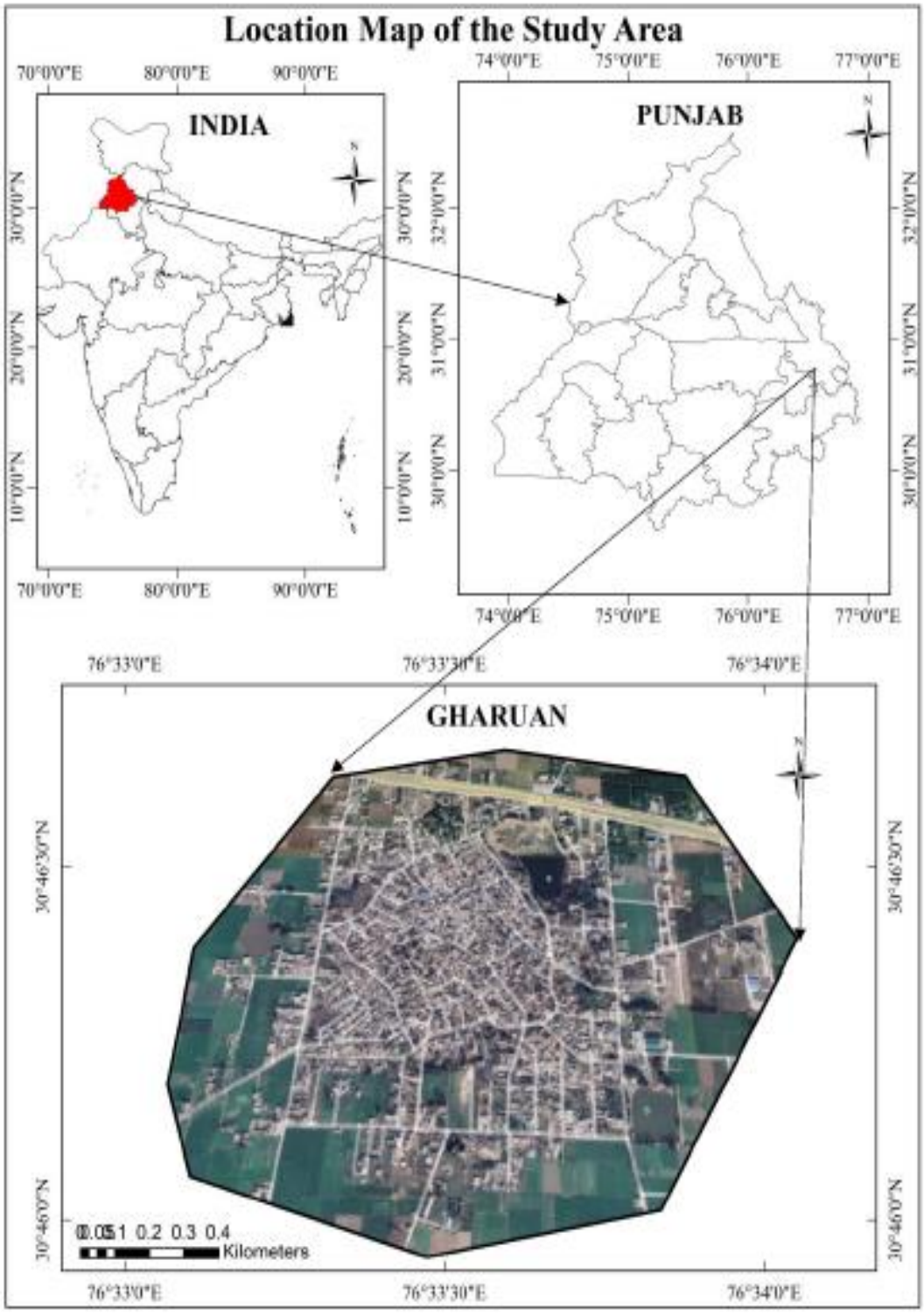


Figure 2.5: Location map of the study area

Guru Har Rai holds Gharuan, a community 8 kilometers east of Morinda (30°47'N, 76°29'E), in high regard. Throughout his travels through this region, he stopped by the location. Many people embraced his lessons. In the settlement, they established a Dharamsala. The eighteenth century saw the replacement of this with a double-story structure with a tall gateway. This structure has a portion that is used for residential purposes. The other part was destroyed, and a new hall with a prakdsh aslhdn in the middle was constructed in its place. The village committee oversees the Gurdwara. The birth anniversary of Sikh Guru Rai is a significant annual festival here. Gurdwara Akal Garh Patshahi Naumi, which honors Guru Tegh Bahadur, is also another old Gurudwara in Gharuari. When planning to travel to Delhi in 1675, Guru Tegh Bahadur is said to have passed through Ghariiari. He initially visited the location inside the village that honors Guru Har Rai as per local custom.

However, the priests there ignored him, maybe because they did not recognize him. After returning, he went to a peaceful grove that was 300 meters north of the settlement. The villagers came to apologized after realizing their mistake. The Guru refused their requests for him to travel to the Dharamsala and opted to stay put. The following day, he set off again in the direction of Nandpur Kalaur. According to another legend, Guru Tegh Bahadur visited this area in or about 1670 and stayed for ten days. His devoted carpenter, Balap Ram, worked for him. Numerous sick villagers were cured by the Guru. The Gurdwara is a one-room structure located next to a tiny pond in a mango garden. A Niharig Sikh is present and sitting with the Guru Granth Sahib.

The town of "Gharuan'' attributes its most important aspect of identity to being the 20th sacred "manji" conferred upon Sikh Guru Shri Guru Amar Dass ji at the holy city of Goindwal Sahib. This manji was given to Baba Rang Das Bhandari, who had been originally from Batala but moved to the town of Gharuan after receiving the "manji'' from Guru Sahib. In the sacred city of Goindwal Sahib, Shri Guru Amardass ji constructed a total of 22''manjis'' and 124''pihreys'' for the purpose of spreading "Gurmat'' and the teachings of Shri Guru Nanak Dev ji across the nation. The son of Baba Rangdass Bhandari, Baba Nand Lal Ji, worked even harder to spread Sikhism all around the Gharuan area. After Baba Rangdass Bhandari, Baba Nand Lal ji faithfully carried out his duties, and Gharuan became a significant Sikh religious centre. As the village "Gharuan'' is a Sikh religious centre, for the current area of research it

has been the right place for the survey. Because of the touch of the traditional culture of Sikhism in this place, it has been a centre of manufacturing and designing of the Sarbloh Metal Craft in Sikhism. The current status of the same has been the part of next section.

2.6 Ironsmiths of Gharuan Village

Gharuan village is known for Sarbloh metalcraft. The 7th Sikh Guru Shri Guru Har Rai Sahib is credited with bestowing the Sarbloh utensils to the small town called "Gharuan'' during one of his visits. The ironsmiths village is said to have received blessings from Guru Sahib for the unusual task of creating Sarbloh kitchenware, which are crafted entirely of pure iron. Sarbloh is a compound word where "Sarb'' stands for everything and "loh'' stands for iron. The ironsmiths of town received a blessing from Guru Sahib promising that their ability to create Sarbloh utensils would be exceedingly lucrative and that they would fetch prices comparable to gold, making this village the only exclusive hamlet producing Sarbloh utensils. A small number of families who have established here have carried on the long-standing practice of creating sarbloh utensils, a craft that has been passed down to them from their ancestors since the time of Shri Guru Har Rai Sahib. Sikhs are baptized in a sacred ritual using a lot of sarbloh utensils. In this study, such families have been interviewed for justifying the different aspects of this research. Mainly author has focused on the demographical study of these families. The Sarbloh metal craft site in the village has been shown in Figure 2.6 below.

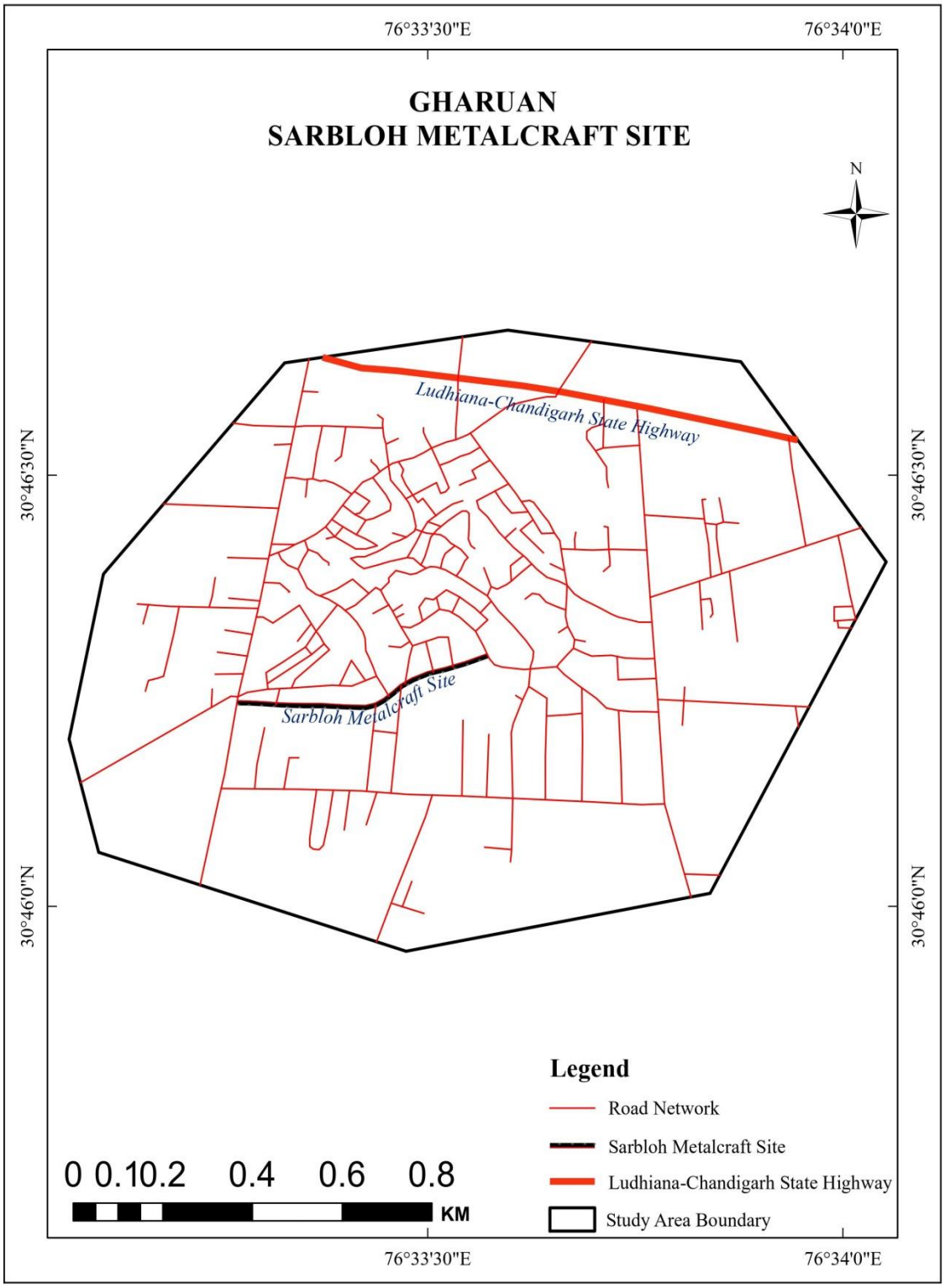


Figure 2.6: Sarbloh metal craft site **"Gharuan''**

Socio-demographic factors are very helpful for describing social dynamics. A descriptive examination of these factors may reveal evolving requirements and impending pressures in the domains of health, education, marriage, employment, professions, etc. These background factors can also be used to explain other social variables. Therefore, comprehending rural social dynamics and, to a certain extent, a community or a country is made easier by this study of socio-demographic factors. The current study focuses on these qualities in the Indian Punjab village of Gharuan. The small town "Gharuan'' in the district Mohali in the province of Punjab of India made up the demographic of the study. Gharuan had a population of 6,302 people living in Gharuan. Overall, 3,324 of whom are men and 2,978 of whom are women. Specifically, Ironsmiths are about 40 people (or 10 houses). It was helpful to evaluate the social and demographic variables under research by conducting a survey.

Age, sex, household, and caste data were also gathered using a survey questionnaire. Gender ratio and age distribution of any population have historically been useful tools for explaining demographic phenomena. It displays historical, current, and foreseeable trends in technology and crafts. Because age and gender are the foundations on which society assigns social roles, age-sex composition has a significant impact on society and professions. In the village, there were 22 people over the age of 55 living in the 7 houses. We chose this age range on purpose because it is expected that they have seen changes over the past five decades. Following a methodical selection process, 40 men and 0 women were chosen as respondents. In addition to these 500 respondents are those who regularly use the utensil of Sarbloh.

For interviews with people aged 55 and older, a schedule of open-ended and closed-ended questions was created. Descriptive and trend analysis form the foundation of our conclusions. In order to evaluate the changes over time, one decade is chosen as the starting point. Joint families continued to provide socio-economic support for senior relatives in traditional societies. As a result of the respondents' chosen age distribution, it was found that six of them lived in joint families and four belonged to nuclear families. The majority of older respondents were living with their married children, as might be expected. In several instances, more than one respondent (female or male) from the same home was questioned. To avoid any duplication, the household was regarded as one in these instances.

2.7 Significance of Metal Crafts and Sarbloh in Sikhism

Sarbloh is a historic Sikh metal art (raw iron). Sarbloh is made up of the terms “sarb” which means everything, and “loh” which signifies iron. We concentrate on the sarbloh metal craft production centre in Gharuan, a town close to Mohali. For six generations, families of ironsmiths have been producing these metalcrafts. Sikh Guru Har Rai Sahib stopped by the area and gave these blacksmiths a blessing during their travels for their exceptional job creating sarbloh utensils out of pure iron. Fewer families have now established enterprises in the area to carry on the long-standing heritage of producing these metal crafts. These items are primarily used during the baptismal ceremonies of Sikhs. That is why kitchenware is referred to as holy workmanship.

Another important reason why Sikhs value Sarbloh so highly is the emotional significance it holds for the Khalsa. The Khande Di Pahul (ambrosial nectar), which was used to initiate the Khalsa, was prepared in the Sarbloh Baata (bowl). The combination was stirred while it was being prepared in the Sarbloh Baata by the Khanda (double-edged sword), which was also made of Sarbloh. Eating at Sarbloh signifies for many Sikhs ingesting the substance from whence they were formed. In a broader sense, Sri Guru Gobind Singh Ji instructed the Khalsa to always carry the five kakaars. The Khalsa was created on this day. Hundreds of Sikhs were formally initiated into the Khalsa on that day, however not each one of them was given a set of the five Kakaars. The Kakaars, which include Kes (uncut hair), Kara (bracelet), Kanga (comb), Kachhera (shorts), and Kirpan (sword), were already being worn by Sikhs at the time. Only when the Khalsa was initiated did these Kakaars become the recognized emblems of Khalsa identity.

The Khalsa was designed to establish an official order in order to give the Sikhs a distinctive identity that was unrestrained by caste, race, etc. In the Khalsa, order reigns supreme. The practice of sarbloh use distinguishes Sikhs from adherents of other faiths and establishes the Khalsa identity. It is also a great idea to utilize Sarbloh because it promotes humility. According to Sikhism, wearing expensive metals like gold and silver is a sign of materialism. People typically wear gold or silver to show off their wealth because of its value. It is recommended to wear karas made of simple metals like Sarbloh or steel instead of karas made of gold or silver.

After all, Sarbloh urges a Sikh to preserve humility and refrain from the five vices (lust, wrath, greed, attachment, and ego) because Sikhi stands above all of them. In the next section, the details of the Utility of metal craft made of the metal called "Sarbloh'' have been given for Sikhs.

2.8 Utility "Sarbloh" for Products

In this section, the details of the utility of the products that have been made of "Sarbloh'' metal for religious and community usage have been given in the succeeding part.

2.8.1 Religious Usage

Mainly Sarbloh products are used for baptizing ceremonies in Sikhs as it is considered the most respected metal in the Sikh community. As it is mentioned in SGPC (Shiromani Gurudwara Prabandhak Committee, Amritsar), Rehat Maryada (Way of Living Life) one Sikh must be baptized with Sarbloh and must make use of the Sarbloh products for the rest of their life. The products mentioned ahead are the ones that fall under the Rehat Maryada (Rehat Maryada, SGPC, Pg. 20). There are following religious products that have been manufacturing using Sarbloh.

1. Bata (Bowl)
2. Khanda (Vertical two-edged short sword)
3. Kirpan (Shree sahib)
4. Kada (Wearable in hand)

2.8.2 Community Usage

Products that are used for langar purposes and also in kitchen usages on a day-to-day basis by the common people. There is a section in Rehatnama that mentions that a Sikh who has accepted to be pure, has to make use of the utensils for cooking and eating which are made of Sarbloh. It has been given the highest recognized metal of purity in Sikh (Pyara Singh Padam, Rehatnama, Pg. 69-79) It is mentioned in Dassam Granth, Chapter Akal ustat, ''The All-Iron Lord is my Protector, The Destroying Lord is my Protector, The All-Iron Lord is Ever My Protector''(Dassam Granth, Shri Guru Gobind Singh Ji, Pg. 33)

The product for cooking and eating made of is Sarbloh.

1. Karaha (Big Wok)
2. Karahi (Small Wok)
3. Pateela (Cauldron)
4. Praat (Platter)
5. Tawa (Circular Griddle)
6. Karshi (Ladle)
7. Sippi (Spatula)
8. Thaali (Plate for eating)
9. Kauli (Small bowl for gravy)
10. Chammach (Spoon for eating)
11. Grava (Jug for water storage)
12. Cup (For Drinking)
13. Glass (For Drinking)
14. Miscellaneous

2.9 Research Gap

1. After going through the literature, we found that no detailed and comprehensive study had been conducted so far that look into detail the various aspects related to Sarbloh metalcraft in Sikhism.
2. There is a lack of exploration when it comes to understanding and analyzing the craftsmanship and significance of Sarbloh Metalcraft.
3. Another research gap we found is that there is no specific study has been conducted on the utilitarian aspect of the Sarbloh metal craft in the Sikh community.
4. The fourth research gap pertains to the absence of exploration of economic details of Sarbloh products.

Chapter - 3

CHAPTER 3

COMPARATIVE ANALYSIS OF THE SIGNIFICANCE OF IRON IN MAJOR RELIGIONS OF THE WORLD

3.1 Metal Report of Sarbloh

The bata, a bowl or cauldron used by Guru Gobind Singh Ji to cook the Amrit at the Khalsa initiation ceremony in 1699, was made of Sarbloh, which and that purely wrought iron. Another item constructed of Sarbloh was the Khanda, a double-edged blade or sword. All Amrit Sanchar is still held with a Sarbloh-made bata and khanda. Sarbloh must also be used to make the Kara and Kirpan, two of the Five Ks that a Sikh must always have with him or her. Cast iron and steel, which only became widely used throughout the Industrial Revolution of the 19th century, should not be confused with Sarbloh. Iron is believed to have first been manufactured in India, near the Indus River. It is possible that artisans were making iron ore combined with charcoal in ancient forges using forced air (from bellows) in an effort to replicate the chunks of metal that are even today discovered in the world's deserts or lumps of iron formed by lightning strikes (which also produce glass and start fires).

Firstly, a lump of iron was created, which is now also referred to as bum steel. Once there was enough raw iron available, it could be heated up and hammered into the desired shape, such as a knife, sword, tool, or pan like a Bata. Iron billets with a high carbon content were being produced by artisans in what are now Panjab and Gujarat, and the sword industry valued them highly. Long before the metal became known as "watered'' or "Damascus steel,'' craftsmen in the present-day Panjab and Gujarat regions were creating billets of raw iron rich in carbon that were highly sought after by the sword makers in the Middle East. This "steel'' should not be confused with the steel blades, automobiles, or frying pans of today, which were made conceivable by late nineteenth-century manufacturing methods. What distinguishes Sarbloh and iron from each other is that pure iron is pliable and malleable. Iron does not get hard through heating. To strengthen its hardness and tensile strength and avoid rusting, sarbloh adds nickel, low carbon (0.1-0.6%), and coatings.

Pure iron is pliable and malleable. Iron does not get hard through heating. To strengthen its hardness and tensile strength and avoid rusting, sarbloh adds nickel, low carbon (0.1-0.6%), and coatings. (Sarbloh Kada all different designs). In case anyone wants to test whether the item is made of Sarbloh or not, an option is to attach a magnet directly to the item for example "Kirpan''. If the magnet sticks, the kirpan is Sarbloh to prevent rusting of the item made of Sarbloh, it must be rubbed with sand, and then some desi ghee must be added after cleaning. If anyone cleans it frequently, as it will with Sarbloh Kirpan, it will also eventually become shiny.

3.2 Origin and Development of Iron Globally

Iron has been found and developed across the world at different times. The first fragment of smelted iron was discovered in Iraq in around 5000 BCE. It was an unidentified object measuring 4.30 cm long, found in a grave near Samarra, Northern Iraq (Tripathi, V. 2008). Further, the earliest datable evidence is a piece of artificial (man-made) iron identified by the archaeologist as approximately 2700 BCE in level V of Tell Chagar Bazar in north Syria (Banerjee, N. R. 1965). Iron was scarce in Syria prior to 1500 BCE, but around the middle of the second millennium, evidence increased. However, the actual industrialization of iron did not start until between 1300 and 1200 BCE.

Iron artifacts discovered at the site of Hama can be dated to the period between 1450 and 1100 BCE. After the Hittites arrived in Syria in about 1200 BCE, iron production and usage became widespread. The most productive region for the growth of the production of iron in antiquity was Turkey, previously known as Asia Minor. The Hittite empire's achievements, which were discovered at the town's Boghaz Keui, shed much information on the usage of iron in the kingdom from the 20th to the 13th century BCE. In Chaldaea and Assyria, the very first use of iron was noticed in 4000 BCE. A knife, along with an iron blade, was discovered in an Anatolian Hattie tomb and dated to 2500 BCE. The Hittites of Anatolia in the Late Bronze Age were formerly credited with the invention of iron smelting. They were thought to have a stranglehold on the production of iron, and their empire was built on this advantage (Pleiner, R. 1980).

It is thought that the development of iron smelting and Metal crafting skills in Anatolia, the Caucasus, and the Balkans in the latter half of the second millennium marked the start of the Iron Age in the ancient Near East (Waldbaum, J. C. 1978). The appearance of individuals who attribute the change to problems with cost and accessibility instead of technological advancement on its own has, though, called into question this notion. Around 930 BCE, iron was first smelted in a bloom at Tell Hammeh in Jordan. Somewhere at the end of the second millennium BCE, Crete had access to iron (Banerjee, N. R. 1965). At various places, such as Phaistos, Vaphio, and Kakovatos, iron jewellery from the period between 1500 and 1200 BCE has been discovered. This included items like iron rings (Banerjee, N. R. 1965). Iron in Europe spans the closing centuries of the prehistoric era and the first few decades of the historic era. The final phase of the prehistoric era and the initial proto-historic period can both be included in the definition of the local Iron Age.

It is likely that the Caucasus brought ironworking to Europe in the late 11th century BCE. Over the next 500 years, it progressively expanded north and west. At the same time (Collis, J. 2003), iron technologies were put to general use in both Europe and Asia. The use of iron in northern Europe appears to have been very widespread before Caesar's invasion. In Europe, the Iron Age is typified by the intricate patterns on tools, weaponry, and cooking utensils. Iron in Central Asia has found its evidence in the Dahistan civilization and the Yaz civilization. It is possible to situate the Iron Age in Central Asia, which was a part of the old USSR, between the third and the middle of the first millennium BCE. Transcaucasia produced the first iron in history and the very first iron in the USSR, dating to the end of the second millennium BCE (Tripathi, V. 2008). The production of iron in South Asia lies between both the Bronze Age and the Early Historic Era. South Asia is home to several Iron Age cultures, including the Megalithic civilization. There has been no evidence of the earliest stages of the development of iron technology in South Asia to support (Wertime, T. A., & Muhly, J. D. 1980) the theory of the diffusion of iron from an eastern Mediterranean source or for a unilinear development, despite the existence of the Painted Grey Ware culture and the Gandhar Grave culture. Therefore, there is the likelihood that there may be various iron technology centers that have evolved independently over time in various geographic regions of the vast Indian Subcontinent.

3.3 Origin and Development of Iron in India

The place and time of the emergence of iron artifacts and ironworking in India continue to be hotly contested research topics, and they are closely related to the equally contentious issue of their connection to the alleged migration of individuals from the West in the 2nd millennium BCE, as is frequently hypothesized on the premise of the Rigveda. The very first indication of iron in India has been provided by the greyware levels at Alamgirpur, Atranjikhera, and Ahichchhatra (Tripathi, V. 1976). As from the middle level of the Painted Grey Ware deposit, a small-scale excavation carried out in Hastinapur in 1962 produced completed iron items in the form of nails and knife blades along with diverse iron artifacts like spearheads, nails, needles, blades, and several formless iron pieces, as per reported by Kausambi, the production of iron from PGW and pre-PGW deposits (Sharma, G. R. 1960). Further iron-working history in India was first discovered in the middle of 700 and 600 BCE (Gordon, D. H. 1950). However, little evidence of iron utensils from the era of 1800 BC to 1200 BC has been found in archaeological sites in India, including Malhar, Dadupur, Raja Nala Ka Tila, and Lahuradewa in modern-day Uttar Pradesh.

Hence, for a clear view of the origin and development of iron in India, an in-depth examination of the existing literature and archaeological data sheds significant insight into the illustrious history of Indian iron throughout time. It has been alleged that Egypt, the Arab world, and European countries adopted the Indian iron-making method (Neogi, P. 1914).In India, periods of approximately 1000 BCE were proposed after taking into account the absolute dating techniques (radiocarbon dates) for the iron-bearing deposit accounts at Atranjikhera in Uttar Pradesh, Hallur in Karnataka, and stratigraphic positions of iron in the lower levels at Kausambi near Allahabad, Jakhera in Etah district in the Ganga valley, and Nagda and Eran in Central India (Subramanyam, B. R. 1964; Banerjee, N. R. 1965; Chakrabarti, D. 1976). Researchers such as (Neogi, P. 1914; Banerjee, M. N. 1929) contend that the Rigvedic Aryans were familiar with iron techniques and employed iron for a variety of purposes. From the above available information, Gopal, L. (1961)concluded that iron was first introduced to India during the late Vedic period.

However, (1974) refuted the idea that iron originated in the West by claiming that there is no logical justification to link the emergence of iron in India with any dissemination from the West, from Iran, or from anywhere else. He claimed that India was a distinct and possibly autonomous centre of early iron production. As per technical research of iron in Komranhalli, which dates back to around 1000 BCE, the smiths at this site should have been able to work with the huge artifacts, suggesting that they had been trying for centuries (Agrawal et al.,1985). The first mention of iron in Chalcolithic strata was made by (Sahi, M. D. N. 1979), who also stated that iron smelting in India may have started as early as the 1600s BCE. By the 1300s BCE, iron smelting was undoubtedly well-known in India on a larger scale. (Sharma, a.k. 1992) offered a range of 1550–1300 BCE for the iron-bearing eras of Gufkaral in Jammu and Kashmir based on radiocarbon data. According, to all such evidence, a timeframe of 1300–1200 BCE has been proposed for the introduction of iron in India, while 800 BCE has been proposed for the mid-Ganga valley (Prakash, B., & Tripathi, V. 1986).

According to (Chakrabarti, D. K. 1992) in Ahar, it could be the first quarter of the 2nd millennium BCE, while in Malwa, it may be just after the middle of the 2nd millennium BCE. However, due to ambiguous stratigraphy, the earliest dates for iron at Ahar are disproved. Recent archaeological digs by the Uttar Pradesh government archaeology department in Sonbhadra district along with other places such as Malhar district in Chandauli district, Dadupur district in Lucknow district, and Lahuradeva district in Sant Kabir Nagar district show that iron use and iron working were common in the Central Ganga plain and the Eastern Vindhyas from the early 2nd Millennium BCE (Tewari, R. 2003). The author asserts that whenever including all information about the radiocarbon dates, it is possible to conclude that iron was used in the Central Ganga plain at least as early as the 2nd millennium BCE and that iron smelting and the production of iron artifacts were known in the Eastern Vindhyas. The various artifacts that have been found in the lower and middle levels of Period II at different places are shown in Figure 3.1.

(a) (b)

Figure 3.1: Iron artifacts found from (a) Raja Nala-ka-tila, Dist. Sonbhadra (b) Malhar, Dist. Chandauli (‘‘AN ANALYSIS OF IRON AS MENTIONED IN THE QURAN’’, 2018)

The emergence of iron and ironworking has been further seen quite differently for different periods, including the Vedic period, the Brahmana Age, and the Epic Age. This difference has been noticed based on the use of iron and the religious significance of iron. To investigate the same thoroughly, the following section discusses the use and significance of iron in various religions in detail.

3.4 Significance of Iron in Hinduism

Hinduism is a significant international religion that originated on the Indian subcontinent and consists of many different philosophical, religious, and ritual traditions. While British writers first developed the term “Hinduism’’ in the early 19th century, it refers to a huge legacy of books and activities, a few of which date back to the second millennium BCE or even before. Hinduism is the earliest surviving religion on Earth if the Indus Valley civilization (3rd–2nd millennia BCE) served as the origin of these teachings.

Although ritual and the visual and performing arts also played a significant role in the dissemination of this religion, its numerous sacred scriptures in Sanskrit and local languages served as a means of transmission to other regions of the world. In the Sanskrit language of Hinduism, the word “Ayas’’ and its meaning have long been disputed. Many people think that iron was nonexistent during the Vedic Period and the term “ayas’’ refers to non-ferrous alloys such as bronze, brass, etc. There has not been any proof to date that ancient sages like Vyas and Valmiki knew about iron. Additionally, it was thought that the so-called Aryans carried iron into India and that people first settled in the plains after using iron tools to clear the swamps and forests. But this belief is not true. Numerous proofs have been investigated by (SHARAN, 2022). The author has given proof that was employed in the Valmiki Ramayana to choose the right spouse for Sitajee.

It is generally known that following the Mahabharata War, Dhritrashtra hugged an iron dummy rather than Bhima. Iron made up mace of Bhima. Similar to this, the Mahabharata contains numerous locations with precise descriptions of iron. Many claim that, assuming the Mahabharata War ever occurred; these descriptions were created or incorporated many decades after the conflict. Further, the Vedas make numerous references to the word “ayas”. Numerous passages in the Rigveda describe “ayas” as weapons too. The problem of identifying “ayas” has been tackled by various academics such as (Banerjee.,1929) and (Roy.,1986) who have determined that the Rigvedic word “ayas” refers to iron.

Similarly, the use and significance of iron have also been noticed in the Brahmana Age of around 1000–500 BCE. In this period, the word “ayas’’ has been classified into “Krshnayas” (black metal) and’’Lohitayas’’ (red metal), which are entirely distinct from one another (Neogi, P.1914). Iron is alluded to as “Krshnayas” in the writings of Neogi. Iron was used for everyday household functions between the Satapatha Brahmana and the time of the Yajurveda during this period. In an epic period of around (500 BCE - 200 BCE), iron was significantly used in two well-known Hindu epics such as the Ramayana and the Mahabharata. The battle between Rama and Ravana’s army is where there have been the most references to iron swords, spears, javelins, axes, arrows, maces, and various other varieties of weapons of war (Neogi, P.1914).

Anyone who has read the Mahabharata might know that the enormous iron "gada" or hammer of Bhima and Duryodhana, as well as the tale of the blind king Dhritarashtra tearing to shreds in great agony an iron statue of Bhima, who had killed the one hundred sons of the king in the great battle of Kurukshetra. Further the "laws of Manu or Manu smriti" also described, how a king had built several types of forts and outfitted them with iron swords, battle engines, arrows, and bows (Neogi, P.1914). Susruta, who was active during this period, provided detailed descriptions of about 100 different types of surgical equipment intended for major surgical procedures. They must have been prepared from steel or iron in large numbers. The renowned Greek ambassador, Megasthenes, who travelled to India in 302 BCE, attested to the fact that the country's soil contained "underground innumerable veins of all sorts of metal" because it contained a lot of gold, silver, copper, and iron, which are used to make both ornamental and functional items as well as weapons and other military equipment (Neogi, P.1914).

Chanakya or Kautilya, who were well-known as Chandragupta's prime minister, provided a wonderful description of political, industrial, social, and military organization in the 4th century BCE and discussed numerous weapons used in battle, including iron swords, arrows, the 'killer of a hundred" sataghni, axes, spears, etc. The renowned grammarian Panini mentions iron in passing in his work "Astadhyayi'' from the fourth century BCE. He discusses tools used by metal smiths, such as the ayoghana (hammer) and the kutilika (hook) (Tripathi, V. 2008). In the Sanskrit language, Amarakosha, these and other terms like "shining", "sharp" and so on are mentioned. It denotes the general characteristics of iron and steel in the fifth to fourth centuries BCE.

3.5 Significance of Iron in Islam

Islam is a prominent religion that was introduced to the globe by the Prophet Muhammad in Arabia in the seventh century CE. The essential religious principle of Islam is that the believer accepts submission to the Arabic word Islam of Allah, which means "surrender,'' sheds light on this principle. It is believed that Allah alone is the creator, preserver, and restorative of the world. The Islamic holy books known as the Qur'an (commonly written as the Koran in English) that Allah conveyed to his messenger Muhammad reveal the will of Allah, which human beings must obey. It might be that several people are unfamiliar with the fact that the

Quran contains an entire segment titled “Iron’’ or Surah “Al-Hadid’’ in Arabic. In Surah “Al-Hadid’’ verse 25, one of the verses that specifically mentions iron.

’’وَأَنْزَلْنَا الْحَدِيدَ فِيهِ بَأْسٌ شَدِيدٌ وَمَنَافِعُ لِلنَّاسِ وَلِيَعْلَمَ اللَّهُ مَنْ يَنْصُرُهُ وَرُسُلَهُ بِالْغَيْبِ ۚ إِنَّ اللَّهَ قَوِيٌّ عَزِيزٌ‘‘

‘‘In order for Allah to reveal those who assist Him and His invisible messengers, he also sent down iron, which has great power and advantages for the populace. Truly, Allah is powerful and Almighty in Might’’.

According to research, iron is contained in the earth’s core, and we need to drill mining in order to get the metal that is so prevalent in our homes. But in this case, Allah (swt) claims that iron has been sent down. This is intriguing because a recent paper from the University of Oslo in Science Daily claims that iron actually originated from iron-nickel meteorites that were created by the nuclear explosion that takes place at the end of a big star. The events that took place millions of years ago caused the iron to melt and leak through the ground, which is how we came to locate iron in the earth (Ghernaout, D. 2017). The passage continues by mentioning “mighty force and advantages of the people of iron. Here can now understand that iron is a crucial mineral found in the hemoglobin of our blood. People who do not get enough iron get sick, so many need to take iron supplements to strengthen their immune systems. Iron has advantages that go beyond health. It is widely used in the manufacturing sector, including in the construction industry and the manufacture of machinery, equipment, transport vehicles, and other appliances. These are all beneficial to people in some way.

Allah (swt) mentions a concept in Surah Kahf, verse 96 of the Quran.

’’آتُونِي زُبَرَ الْحَدِيدِ ۖ حَتَّىٰ إِذَا سَاوَىٰ بَيْنَ الصَّدَفَيْنِ قَالَ انْفُخُوا ۖ حَتَّىٰ إِذَا جَعَلَهُ نَارًا قَالَ آتُونِي أُفْرِغْ عَلَيْهِ قِطْرًا‘‘

‘‘Give me iron plates, was all he murmured till he levelled them here between two rock walls. Bring it to me so I can pour melted copper over it after blowing it with bellows till it looks like fire’’. In this verse, Allah (s) discusses the processing of iron and even the creation of an iron-copper alloy.

Even if modern techniques of iron manufacturing are far more advanced and advanced, this stanza is congruent with them. The Quran uses a similar theory to explain the smelting process, burning, pouring in, and casting of iron. The line seems to be from "The Cave'' of the Surah Kahf Chapter, which tells the tales of Dhul Qarnain, Yajooj, and Majooj. In order to stop future wrongdoing in that country, Allah (swt) is explaining how Dhul Qarnain built a wall between a group of individuals and Yajooj and Majooj. Dhul Qarnain had to construct a wall that would be durable enough to stand the test of time. It has been found that Allah (swt) references the addition of copper to iron in the construction of this wall. Which data from the European Copper Institute reveal that corrosion resistance is one of the essential attributes of alloy. Nowadays, According to metallurgists if iron oxide caused copper ferrite to develop the substance would also be acid-resistant. All these discoveries were made at the end of the 20th century; the fact is that iron is specifically mentioned in Verse 25 is absolutely astounding in the Quran.

3.6 Significance of Iron in Sikhism

In the late fifteenth century, the Punjab province of the Indian subcontinent saw the founding of Sikhism. They are referred to as Sikhs. Gurmat is the name of the religion of the Sikhs. The meaning of Gurmat is the Path of the Guru. Sikhism was founded by Guru Nanak and nine more Gurus followed him in succession, as per Sikh history. Sikhs believe that a single spirit lives inside each of the ten human Gurus. The Sikhism holy book Guru Granth Sahib also called the Adi Granth (''First Volume''), was regarded as the only Guru following the passing of the tenth Guru Gobind Singh, when the spirit of the everlasting Guru was transferred to it. In Sikhism, the metal iron (Sarbloh) plays an important role as the same has been employed in manufacturing Baata (bowl), Khande Di Pahul (Ambrosial Nectar), Khanda (Double-Edged Sword) and five Kakaars. Another important reason why Sikhs value iron (Sarbloh) so highly is the emotional significance it holds for the Khalsa.

One of five Sikh religious symbols (Panj Kakaars, or five Ks) worn by devoted adherents is the bangle or Kara. The last thing that Sikhs will look at before committing a transgression with their hands is the iron bangle, which serves as a visual reminder to practice good moral behavior. The Khande Di Pahul (Ambrosial Nectar) that has been used to start the Khalsa is made of iron, or Sarbloh Baata (bowl). The mixture that has been prepared in the Sarbloh Baata

by the Khanda (Double-Edged Sword) is also made of iron or Sarbloh. Furthermore, Sikh Rehat Maryada recommends the utilization of a Sarbloh or pure iron tool for the production of the Amrit Sanchaar. Pure iron utensils are held with a unique veneration and esteem in the Sikh religion because Sarbloh, or pure iron, is used to make the baptismal water for the initiation ritual. In the prayer of Akaal Ustat in the Dasam Granth, Guru Gobind Singh Ji, the tenth Guru, had such deep regard and devotion for Sarbloh that he referred to God as "Sarbloh'':

ਅਕਾਲ ਪੁਰਖ ਕੀ ਰਛਾ ਹਮਨੈ ॥ ਸਰਬ ਲੋਹ ਕੀ ਰਛਿਆ ਹਮਨੈ ॥
ਸਰਬ ਕਾਲ ਜੀ ਦੀ ਰਛਿਆ ਹਮਨੈ ॥ ਸਰਬ ਲੋਹ ਜੀ ਦੀ ਸਦਾ ਰਛਿਆ ਹਮਨੈ
॥ ਆਰੈ ਲਿਖਾਰੀ ਕੇ ਦਸਤਖਤ ॥

''The Akaal Purakh'' is my protector. My protector is the Pure-Iron Lord. My protector is the All-Destructing Lord. My constant protector is the Pure-Iron Lord (Dasam Granth, p. 33). Prashad (a sacred offering) and Langar (a holy supper) are prepared with Sarbloh kitchenware in historical and significant Gurdwaras. Ever since the earliest Sikh Gurus, the utensil has been a staple for both food preparation and consumption. According to the Sikh Rehat Maryada, the Karha and Kirpan, which are considered Panj Kakkar, must also be constructed of Sarbloh. The severe Rehat (rule) known as "Sarbloh Bibek'' or the "all iron quality'' is adopted by severe Sikhs and Akali Nihang. One of the most important definitions of the Khalsa Panth calls for only using Sarbloh utensils to consume food. Sarbloh (all-iron) is valued more highly than other metals in the Sikh tradition since it is a versatile and useful element from a scientific standpoint.

It prevents food from entering it and adds minerals that both feed and build the body. Historically, Sikhs who adhered closely to this Rehat were frequently regarded as having bodies made of rock. Each time one eats a Sarbloh, they are reminded of their birthday. They are eating from the same Sarbloh that provided them with the batta. Bhai Daya Singh's Rehitnama contains historical evidence that backs up the Gursikh custom of preparing food and dining with Sarbloh.

ਪਾਤ੍ਰ ਸਰਬ ਸੁ ਲੋਹ ਕੇ, ਭੁਗਤੇ ਅਸਨ ਸੁਆਦਿ ਲੱਕੜੀ ਕੋ ਭੋਜਨ ਭਖੇ, ਨੀਲ ਬਸਤ੍ਰ ਮਿਰਜਾਦ... ਲੋਹ ਪਾਤ੍ਰ ਮੈਂ ਛਕੈ...

(ਭਾਈ ਦਯਾ ਸਿੰਘ ਜੀ ਰਹਿਤਨਾਮਾ, ਪੰਨਾ 75 – 'ਰਹਿਤਨਾਮੇ', ਸੰਪਾਦਕ ਪਿਆਰਾ ਸਿੰਘ ਪਦਮ)

‘‘One consumes delicious cuisine while using sarbloh utensils... Eat with Sarbloh utensils’’. Sarbloh Rehat is promoted by organizations such as Damdami Taksaal, Nihung Dals, and Akhand Kirtani Jatha. The Amrit Sanchaars can only be performed with a Sarbloh baatta (bowl) and a Khanda (double-edged blade) and Sarbloh. Sarbloh is also a Rehat. No one can perform an Amrit Sanchaar in a bucket made of plastic. Only Sarbloh needs to be used. Even if someone decides not to adhere to Sarbloh Rehat, they should at least refrain from ridiculing or making fun of the Gursikhs who are doing so. All of puraatan (old) of Sarbloh langars produced food. You can still see large Sarbloh cooking pots at Sri Harmander Sahib in Amritsar or Sri Hazoor Sahib. In proof of using the utensils made of iron or Sarbloh for cooking and eating the following figures 3.2 (a) and 3.2(b) have been shown.

(a)

(b)

Figure 3.2: (a) Cauldron made of Pure iron or Sarbloh used for cooking Langar (b) Two foreign Sikhs eating Langar in Baata (bowl) made of Pure iron or Sarbloh

‘‘Sarbloh Bibek’’ can be summarized as an exclusive practice that seeks to discipline rather than stratify a person determined on leading a spiritual existence in Sikhism. It offers medical benefits, scientific advantages, and morale-boosting effects on the soul. The aspects that saints today are really interested in it. Before, dismissing something as being unimportant, one should recognize and evaluate its significance; only then it will be able to maintain its unique prominence within the pantheon. Otherwise, ignorance will prevail (Rehat Maryada, sgpc).

3.7 Significance of Iron in Christianity

Christianity is a significant religion that originated in the first century CE with the life, lessons, and death of Jesus of Nazareth. It has grown into the most prevalent religion in the world and the one with the greatest geographic dispersion. Its community has over 2 billion adherents. The Roman Catholic Church, Eastern Orthodox Churches, and Protestant churches make up its three main religious communities. Jesus Christ is mentioned in the prophecy of Revelation 19:15-16 and is said to return with a rod of iron in his hand. With the help of this rod, which wonderfully captures the idea of strength and power, he will “guide’’ the populace. Despite the fact that brass and iron are frequently mentioned together in the Bible, it is generally accepted that the art of extracting iron from its ores and transforming it into useful forms did not exist before more than 1000 BC and that the creation of brass (bronze) predates it by several centuries. This theory is based on the observation that no dated example of wrought iron has been discovered.

However, the simplicity with which iron corrodes can be blamed for the lack of such tools. In the hieroglyphics of Rameses III’s tomb, for instance, the blades of certain weapons are painted blue, while others are painted red, providing evidence that iron was employed. No convincing evidence has yet been offered to support the theory that the magnificent sculptures on tough Egyptian granite were created using tempered bronze. Steel-based tools appear to have been utilized more frequently. Bronze was replaced by iron for a very long time after its discovery. This was very likely brought on by the challenges in melting it. The technique of iron smelting as it was practised in Mount Lebanon in earlier centuries was reportedly detailed to the author by an elderly mountaineer. He had grown up seeing his smelting father manage one of the final furnaces to be ignited. Each firing required numerous cords of wood, particularly green oak branches, and several days of laborious pumping at the eight bellows. As a result, after the

furnace cooled, a little lump of wrought iron was taken out. Thus, obtained iron was transported to Damascus where it was transformed into steel by craftsmen who kept their processes a secret. Undoubtedly, the ancients utilized the same procedure, even though it hasn't been used in years. It seems hardly improbable that the "northern iron'' mentioned in Jeremiah 15:12 (King James Version) was the iron from Lebanon that was later converted into steel. The slag heaps from the old furnaces may still be seen in several areas. Iron's bible meaning is a symbol of fortitude and endurance. Iron is frequently linked to power and stamina. Its resilience and capacity to survive damage make it a suitable representation enduring strength of God. The country of Israel is described as being rich in iron in Deuteronomy 8:9, which alludes to the power of the land itself. In biblical times, iron was also utilized to make weapons like swords and spears, further highlighting its relationship with power.

Iron is a popular material for building constructions because of its resilience and strength. Behemoth is characterized as having "bones like bars of iron'' in Job 40:18–19, demonstrating his rock-solid solidity. In a similar vein, Isaiah 48:4 compares Israel's tenacity in their faith to "bars of iron.'' Additionally, iron is linked to divine retribution and retribution. God compares his approaching judgement on Judah to a "seething pot'' that is facing the north and opening its mouth towards Jerusalem in Jeremiah 1:13–14. The troops of Babylon that will invade Judah as tools of God's wrath are symbolized by this pot; they are depicted as being constructed of bronze (meaning power) but having fangs made of iron (indicating cruelty). Iron can also stand for cleaning and repurposing. According to Proverbs 27:17, "Iron sharpens iron" meaning that people can strengthen one another via open communication and helpful criticism. Malachi 3:3 describes how God will refine his people with fire to make them pure like gold or silver.

Iron was an important material traded during the period of the Bible. In 1 King 10:21–27, King Solomon's wealth is illustrated in part by the enormous quantities of silver and gold as well as iron that he had. Iron is frequently associated with fire in biblical imagery. David praises God in Psalm 18:34–35 for preparing him for war and giving him "hind's feet'' feet so he might stand in lofty places. He continues by saying that God has made him powerful by giving him the right hand of power, which he depicts as having been supported by the tenderness of God and made powerful like iron, and that God has also given them the shield of salvation. Further,

beyond its physical attributes, iron has a spiritual value. It is frequently linked to God's majesty and power as well as the perseverance and constancy of people who obey Him. According to the circumstances surrounding a dream, iron might symbolize several things. Iron may signify power, steadiness, or durability in dreams. However, rusted or damaged iron might be a sign of frailty or fragility. Iron weapons like swords or spears may also represent battle or aggressiveness in dreams. The term, which was used to describe both finished iron goods and iron ore, has its origins in a prehistoric Semitic language. According to some academics, the word might be related to other words that refer to metallurgy or workmanship. In the end, iron has a rich biblical meaning despite initially appearing to be a simple metal. It stands for fortitude and toughness, steadfastness and stability, divine judgement and retribution, spiritual defence, protection, refinements, and purification-all significant Christian concepts.

3.8 Advantages of using iron utensils

The use of iron utensils is not a recent fad; rather, it has been prevalent since the days of our ancestors. Nevertheless, consumers now search for more "modern and aesthetic'' utensils to brighten up the appearance of their kitchens as a result of modernity and renovations in the kitchen. But iron utensils are gradually making a comeback as more and more people make the switch to the "rustic'' and "retro'' look in the kitchen. They are beneficial to the health of users in addition to being diverse. A more recent study has made consumers aware that the location of the kitchen counts just as much as the ingredients themselves. Therefore, using cheap and unregulated utensil materials can unintentionally harm the health of an individual and cause several chronic ailments. Iron is quickly gaining favour due to the following benefits:

3.8.1 Nonstick surface

Its surface is nonstick. An iron skillet or pan is inherently non-stick, which is remarkable. Therefore, the user would not be concerned about the food clinging to the bottom of the pan any longer, whether you are frying food or a thick piece of steak. The user would not have to be concerned about eating the perfluorinated substances that frequently leak into the meal with conventional non-stick cookware because iron utensils are intrinsically non-stick. Frequent use of these kinds of chemicals can cause health issues, but they are not lethal. You would not have to worry about the food clinging to the pan or the need to continually scrape things off the bottom if you use an iron skillet that has been well-seasoned.

3.8.2 Gets better with age.

The iron utensil gets better with age Cookware made of iron aged and going better. The iron cookware will cook users' food more quickly and uniformly the older it gets. The smoother cooking surface of an iron skillet makes for a more effective cooking experience regardless of how the user cooks on it. Additionally, its capacity to retain heat gets better with time and use.

3.8.3 Efficient heat dispersion and retention

The cast iron utensils are frequently preferred for frying, and I have never pondered the reason for that. Iron has a strong capacity to hold heat, which guarantees even heating throughout the pan to ensure that no food is left uncooked in any area. Iron is excellent for braising, poaching, broiling, and grilling, in addition to frying. Due to its non-stick surface and exceptional heat retention, you can cook your meals with just a small amount of oil. Additionally, improved heat retention makes the cooking process more energy-efficient, allowing you to prepare your food more quickly and with less wasted fuel. Other than this, Iron is a durable substance. Iron cookware can operate for a long time with proper care because it is quite durable. Iron utensils don't have a chemical coating as non-stick ones do.

Hence user doesn't need to be concerned about the coating fading quickly. Further, for many different kinds of meals, iron cookware might be a fantastic option. In actuality, cooking with iron utensils is preferable to using regular cookware or non-stick pans. Because food cooked with iron cookware has a distinctive flavour that brings out the true flavour of a classic dish. Last but not least, because of its better heat conduction, iron cookware heats up rapidly and uniformly. This is a result of its capacity to evenly absorb, hold, and transfer heat. This ensures that food is regularly and thoroughly cooked. Since iron cookware can tolerate high temperatures and keep its heat, it is also excellent for searing and caramelizing food.

3.9 Medicinal value of iron utensils

In addition to the other benefits of using iron utensils, it has also contained some medicinal value, which has been elaborated in the following sub-section.

3.9.1 Fulfil Iron deficiency.

Cooing with iron utensils is good for user health as cooking with iron cookware has the potential to release iron into your meal. Food prepared on an iron pan or kadai regularly can assist the body in maintaining a healthy level of hemoglobin and prevent iron deficiency. Iron cookware is therefore beneficial for improving health.

3.9.2 Refrain from chemical leaching.

Each kitchen needs at least one set of non-stick cookware. They make cooking simple, and the food appears whole and in its natural state. The prevalence of harmful chemicals in most non-stick cookware is its main drawback. Even if more and more companies are controlling the usage of specific chemicals, it still exists to some extent. High-heat cooking in such non-stick pans causes the chemicals to degrade and combine with the food. Perfluorooctanoic acid, also known as PFOA, is one of the most prevalent compounds. It possesses cancer-causing qualities, and regular ingestion can have catastrophic effects on health. Cast iron cookware, on the other hand, is significantly safer and does not have any of these toxic chemicals.

3.10 Disadvantages of other metal utensils

Cooking methods can be harmful to the health of the person. Basically, cooking is an art, and plating it properly really highlights the art without all that attention to detail. While cooking, a person must take care of a lot of things, from clean utensils to fresh vegetables, and must practice all the healthy food preparation methods. An improper way of cooking on an inappropriate utensil is bad for health and frequently acts as a catalyst for numerous chemical reactions that influence the health of the person. In this section, various metals other than iron have been discussed for their bad effects on health when used for making cooking utensils.

3.10.1 Disadvantages of Copper Utensil

Copper cookware is frequently seen as a healthy option for both cooking and serving. Copper can keep food warm for an extended period of time. However, it is not advisable to cook foods that are salty with copper because the iodine in salt reacts rapidly with copper, releasing more copper particles. Thus, users must exercise caution when using such tools for cooking.

3.10.2 Disadvantages of Aluminium Utensil

Another frequently employed utensil is aluminium, which may be extremely alluring while the user cooks or serves, but as the saying goes, “All that glitters is not gold” aluminium cookware may not be the best option. Cooking in such utensils is not advised because aluminium warms up quickly and reacts strongly with acidic foods and vegetables. The immune system of the user is affected by these chemical processes.

3.10.3 Disadvantages of Brass Utensil

The user must have observed that their grandmother using brass cookware, which was heavy and required some effort to move! It was widely believed that using brass plates for cooking and dining was healthy. However, when compared to cooking, eating with brass utensils was not as dangerous. While heated, brass readily reacts with foods that are acidic and salt. Therefore, using such tools for cooking must be avoided.

3.10.4 Disadvantages of Stainless-Steel Utensil

Arguably the most popular type of cookware is made of stainless steel, but the majority of individuals are unaware that using it to prepare these favourite foods is not a healthy option. The metallic alloy stainless steel is composed of chrome, nickel, silicon material, and carbon. Stainless steel does not, however, react to acidic foods. But when users buy stainless steel utensils, make sure they are of high quality because they are made by combining metals, which, if done incorrectly, can be hazardous to the human body. So, it has been advised to always use a stainless-steel utensil that is of good quality and durability.

3.11 Harm of coated utensil

Pans and other non-stick utensils have been treated with a substance called polytetrafluoroethylene (PTFE), additionally referred to as Teflon. Carbon and fluorine atoms make up the synthetic substance Teflon. It offers a nonreactive, non-stick, and nearly smooth surface. Teflon is a name used for a product rather than a standalone item. It is a kind of plastic that is sprayed on different objects and then baked to provide a surface that is non-stick, waterproof, noncorrosive, and non-reactive. In doing so, it builds a wall between the product and potential dangers outside and it is harmful for the health. Concerns about Teflon coating were related to some of its chemical characteristics. PFOA, also known as perfluorooctanoic

acid, was once present. A potential risk factor for cancer of the testicles, chronic renal disease, liver illness, thyroid problems, low birth weight, and infertility is PFOA. The majority of companies believed that PFOA burns off throughout manufacturing, although some Teflon-coated cookware contained traces of the chemical. According to 1999 research, PFOA was present in the blood of 98% of Americans. This resulted from the exposure of chemicals to the environment. The possibility of PTFE particles flaking off from cookware made with Teflon coating is another issue with its use. But when consumed, they have little effect. User health is in danger at 570 Fahrenheit. Stable Teflon starts to degrade and produce polymer fumes at these temperatures. The gases could escape via the windows, so you might not be able to breathe them in right away. However, continuing to breathe in these gases can put your health at risk. Users may first encounter transient symptoms that resemble the flu and develop a disease called polymer fume fever, which users have.

Chapter - 4

CHAPTER 4

DESIGNS AND DEVELOPMENT IN SARBLOH METALCRAFT

In this chapter, a detailed visualization of the products made of Sarbloh metalcraft in Gharuan, and the tools used to make them has been presented. In addition, the topic of traditional methods of crafting in a given region of survey (Gharuan) has been discussed. Furthermore, in contrast to traditional methods of crafting, the change in craft development has also been explored. Finally, a distinction has been made between the traditional market system of Sarbloh metalcraft and the current market system of metalcraft.

4.1 Metalcraft techniques

Metalcraft includes both functional and purely decorative items made of different metals, such as steel, copper, metallic silver, bronze, lead, gold, and brass. The first artifacts created by humans were composed of wood, stone, bone, and dirt. Only later did people discover how to mine metals from the earth and shape them into useful artifacts. Vessels, utensils, ceremonial and ritual things, ornamental objects, structural adornment, jewellery, sculpture, and weapons are all examples of Metalcraft. Several of the technical procedures used now are substantially unchanged from those of the past. For instance, the early metal crafters were knowledgeable about hammering, embossing, chasing, inlaying, gilding, wiredrawing, and the use of niello, enamel, and jewels. A detailed description has been given below for each of these.

4.1.1 Hammering and casting

At first, the hammer was used for all decorative metals. All article components were individually hammered out before being riveted together or fastened onto a solid core (because soldering was yet to be developed). Additionally, statues might be crafted from hammered copper plates by cutting them into separate parts and attaching them with metal rivets. An outstanding instance of such art is a life-size statue of the pharaoh Pepi I in the Egyptian Museum in Cairo. The two common techniques for creating metal hammering and casting were established concurrently after approximately 2500 BCE. By around 2500 BCE, Egypt was using the lost-wax, or cire perdue, process, and the Egyptians had likely learned the method

from Sumerian artisans. The hammer remained the major tool for creating works of artwork in the field of precious metals long after the technique of casting sculptures in moulds with cores had replaced the crude and time-consuming riveting procedure. The hammer and the punch were used to create everything attributed to Assyrian, Etruscan, and Greek goldsmiths.

4.1.2 Embossing

The process of raising embellishments in relief from the back side is known as embossing. Before transferring the important elements of the design to the reverse side of the plate, the layout is first sketched on the surface of the metal, and the motifs are then delineated with a tracer. The elevated sections are then smashed into the given asphalt after the plate has been placed face down in an asphalt block. The plate is then taken out and re-embedded without the face on top. The hammering keeps happening, driving the background of the design into the asphalt this time. The metal is given its final shape by a number of these steps, including chasing and re-embedding. Tracing, bossing, and chasing devices are three fundamental categories, and a specialized tool called a snarling iron or springy bar is employed to reach unreachable places. Mechanical methods are also used to create ornament in relief. You can press a thin, malleable sheet of metal over stamps, between dies, or into moulds. All of these techniques date back to ancient times.

4.1.3 Chasing

Hammer blows and punches to the metal's surface are used to chase. These types of punches are designed in such a way that they may achieve any effect the metalworker may need, whether it be in elevation or intaglio. On the outermost layer, the pattern is traced, and the relief can be created by pounding down the surrounding areas to create the backdrop. While embossing work is dominated from the rear, chased relief work often mimics that technique. Chasing is the process of applying a detailed finish to stamped work; the phrase is often used to describe touching up and finishing cast pieces using hand-held punches.

4.1.4 Engraving

Engraving involves cutting or incising a line. Always using a cutting instrument and typically applying manual pressure, engraving is done. In the process of cutting, it separates the material. Carving is the action of applying pressure with a hammer.

4.1.5 Inlaying

The damascening decoration style has Oriental roots and was widely used by early goldsmiths of Damascus; thus it is its given name. It is a method of covering iron, steel, or bronze with gold wire. A sharp object is used to create a fine undercutting on the surface where the pattern will be traced. Hammering is used to push the gold thread firmly into the tiny ridges of the surface being cut. Niello is a silver sulphide or mixture of silver sulphides that are used to inlay engraved decorative motifs. Eraclius and Theophilus, who lived in or around the 12th century, and Benvenuto Cellini, who lived in the sixteenth century, were the first writers to discuss the creation of niello and its use with silver. The process for creating niello involves fusing silver, copper, and lead before adding sulphur to the molten alloy. Once the engraving metal, typically silver, gets moistened with a flux (a chemical used to induce fusion), part of the black product a mixture of the sulphides of silver, copper, and lead powdered; this causes the niello to melt, and run.

4.1.6 Enamelling

It involves filling hollows produced in the surface of the metal with enamel, and cloisonné, which involves putting bars of metal onto the metal surface to create cells that are then filled with enamel.

4.1.7 Gilding

Gilding is the process of applying a covering or design made of gold in the form of leaf or powder to wood, metal, plaster, glass, or other items. The phrase also covers the related use of alloys made of copper, silver, aluminium, palladium, and these metals. Thin gold leaf coatings on royal tomb cases and Egyptian furniture are proof that the most ancient historical citizens had expert gilders. Chinese artisans have been adorning wood, pottery, and textiles with lovely gold motifs since ancient times. The Greeks applied gold amalgamation to metal and heated it to remove the mercury, leaving a layer of gold on the metal surface. They also fire-gilded sculptures made of wood, brick, and marble. The technique that allowed the Romans to decorate their palaces and temples with magnificent gilding was a gift from the Greeks. The pure gold was placed on a foundation made with chalk or marble sand and a size or adhesive of the creature, according to specimens of antique gilding that are still in existence. Even while some machines are used, hammering mint metal into sheets as thin as 1280,000 inches

(0.00001 centimeters) is primarily done by hand. The leaves are placed within the tissue-paper leaves of miniature volumes after being cut to standard 37/8inches (9.84 cm) squares and are then ready for the gilder to use. The numerous materials that the gilder could apply his art to as well as the creative and lovely results he can create might necessitate unique adaptations and uses of his methods and materials. All forms of gilding, however, share some fundamental practices. For instance, priming is required to thoroughly prepare the surface that will be gilded. Depending on the type of base material, smooth paints, lacquers, or binding glues are utilized. Red lead or iron oxide paints can be used to prime (and protect) metals that are prone to corrosion. After the ground has been prepared and is completely dry, the gilder draws out his pattern on it using a pencil or chalk.

The most detailed of patterns can be achieved with the swivel configuration by pressing or pouncing chalk powder or dry pigments into a paper that has been perforated with pricking wheels positioned on swivels. The area to be gilded is measured to produce an adhesive surface to which the gold will be firmly fastened. The sort of surface to be gilded and if it is preferred for the size to dry fast or slowly determine the type of size that should be used. It is prepared to take and keep the gold leaf or powder once the size has sufficiently dried to the point where it just sticks to the fingertips. On the tissue paper size of the book appears, and the gold leaf may be rolled. The gilder often grasps the book tightly with his left hand, folds back the paper to reveal the necessary amount of leaf, and then uses a pointed instrument, such as a sharpened skewer, to separate that amount. He gently moves the leaf segment to its location in his design using the tip of his gilder, a camel hairbrush housed in a thin cardboard holder. The gilder creates static electricity by lightly stroking the tip over his hair, which holds the leaf to the tip. The gilder uses a cushion to retain his bits of leaf during several gilding processes. It is a rectangular piece of wood that measures about 9 by 6 inches, is lined with polished calfskin and cushioned with flannel, and has a parchment shield at one end to screen the fragile leaf from air currents.

After the gilding is finished, the leaf-covered region needs to be whacked with a wad of surgical-grade soft cotton. The gold is burnished to a high brilliance by pressing with cotton. A fine, high polish is also added to the metal by using a gilder’s burnisher, which is a highly polished agate stone placed in a handle. With a camel’s hairbrush, loose pieces of gold, or

“skewing’’ can be taken out of the finished piece. Rub leaf gold over a fine-mesh sieve to turn it into powder. Because powdered gold is so expensive, bronze powders have mostly taken the place of the pricey metal. Gold leaf is applied in ribbon shape when it is used to gild domes and building roofs. See sculpting for more on polishing and other finishing techniques.

4.2 Traditional Way of Sarbloh Metal Crafting

In general, metals are thought to be tough, durable, and useful. Metal usage conjures up images of construction, big industries, and a feeling of tremendous resistance. However, metals may be bent, squeezed, or hammered without breaking or even cracking because they are malleable. The delight of craftsmen in metals is due to this feature. As a result, Indian metalcrafts are well-known throughout the world. Contrary to their hard-working reputation, Indian metal crafts convey a blend of elegance, craftsmanship, and durability. The metal craft made of Sarbloh is based on raw iron which is melted in a furnace and pounded into implements. According to the manufacturers, with proper care, this kitchenware can last a lifetime. Molten metals are poured into tiny clay moulds, which then form them into tiny, round ingots. The cylinder-shaped cast ingot undergoes preheating in an open furnace to render the metal soft and pliable, and it is repeatedly pounded into the appropriate shape on a stone bench with heavy hammers by three to four people in a rhythmic motion while one person rotates the ingot piece to obtain even dents. To keep the metal flexible enough for subsequent processing, the metal ingot is periodically heat-forged or annealed. To create more bowls with less effort and time, the new metal ingots are sandwiched between the half-hammered ingots.

In this technique, four to five metal ingots may be stacked one over the other. With the use of foundry tongs, pincers, and a hammer, the outermost ingot-turned bowl can be removed after being properly expanded. Because coal monitors and withstands the heat and aids in bowl shaping, the base of the bowl is coated with coal combined with water. The iron ingot-formed bowl is then put through numerous finishing processes, including shaping, scraping, buffing, and finishing, all of which are done on a lathe. Moulding is the act of raising a bowl from flat or partially elevated metal by depressing it and keeping the thickness of the metal constant throughout with a hammer on sturdy metal dome anvil pegs. After the bowl has been shaped, it is subjected to scraping, which involves scrapping the bowl from the inside out to level and even out the surface. The bowl’s edge is then filed for a smooth finish.

The master artisan scraped bowls to inspect and finish them consistently on the lathe. The crucible-lit coal heats the bowl at its base, and after that, hot, molten tar is used as an adhesive to attach to the faceplate of the lathe. The electrical rotator motor is turned on after the bowl is placed on the lathe, and the bowl then begins to rotate. The scraped markings are eliminated by rubbing a brass wire sponge within the revolving bowl while holding it in your hand. Later, the bowl is refined and finished by eliminating the extra layers with the use of a scraping knife lathe tool. To further enrich the product, the bowls, and other brass items are occasionally etched and engraved in a variety of motifs, such as floral, ethnic, and patterns that are symmetrical.

4.3 Tools used by Ironsmith for making Sarbloh utensils.

In essence, raw iron is melted in a furnace and worked into implements. According to the manufacturers, with proper care, this kitchenware can last a lifetime. Many Gurudwaras are outfitted with ornate sarbloh cookware in their langar kitchens, which may hold enough food to satisfy thousands of people. The blessed treat known as “karah prasad,’’ which is given out as a kind offering after a Sikh worship ceremony, is frequently made using sarbloh. Sarbloh has health benefits related to cooking’s ability to absorb iron. Sarbloh is a cooking and dining tool used by Nihangs. NRIs from around the world travel specifically to the town to purchase these sacred items. Families that work in the sarbloh industry claim that the money they make is hardly enough to pay for food and housing, but they are a pleased group that wants to pass down this blessed occupation to their offspring with the utmost devotion and faith.

For making the Sarbloh utensils, firstly the iron smiths are given raw iron in the form of sheets. Then, in the furnace, the sheets are heated to a very high temperature to achieve softness. These soft sheets also have a rough structure. Once they have a basic structure, they are improved by hammering it. Other procedures, like welding and grinding, are carried out at the final stage. The finishing touch is added by fastening the required components (like the handle).

The complete process of making utensils made of Sarbloh is presented below,

(a)

(b)

(c)

(d)

Figure 4.1: (a) Heating (b) Hammering (c) Joining (d) Welding

Forging and casting have been the two main procedures that the metals have undergone. Metal ore or waste was traditionally employed as the primary raw materials for industrial operations. From the countryside, metal ore was brought into the city. Tribes that roamed the nearby countryside collecting used vessels from one location to another played an important role in metal scrap collection.

The procedure is as follows:

1. Manufacturers supply pre-cut metal plates to craftspeople.

2. To create a curved shape, the metal sheet is first simply hammered.

3. Hollow out the other half of the curved metal pieces from the base, leaving the other half aside.

4. The metal is repeatedly forged on hot brick kilns until the neck of the "Degchi" reaches the perfect shape.

5. Using the sanding and filing processes, the edges are made smooth.

6. The bottom and top portions are given wedges, and the two are then fastened together.

7. The two sections are joined together using a substance called "tanka.''

8. The preparation is then finished with jute scrub, acid, sand, and tamarind juice.

9. After that, designs are produced on the metal objects by carefully hammering several tiny dents into them.

10. The result is polished with oil at the end.

11. Depending on how the "Degchi'' is used, tinning (or "Kalai") may or may not be done on the inside surface.

The majority of ironsmiths use a ball-peen hand hammer that weighs between 750 and 1 250 g for daily work. A hand hammer ought to have the appropriate weight for the smith. It should be balanced and have a shaft that is longer than is typical for other jobs. For specific tasks, specialised hammers are frequently utilised. These are typically created by the smith as needed. Old automobile axle shafts make good hammer material. Sledgehammers typically weigh

between 3 and 5 kg and can be double-faced, straight- or cross-peened. They may be used with two hands and have lengthy shafts. Every hammer must have its head securely connected to its shaft. It uses both wooden and metal wedges. The hammer head's central lines and the middle lines of the head of the hammer and shaft need to be perpendicular to one another. Hammer faces should be kept clean and polished. Further, chisels are necessary for the ironsmith to cut either cold or hot metal. Chisels are typically short and heavy for cutting cold metal, while they are long and thinner for cutting hot metal. Chisels come in a variety of sizes and forms, and many times, they are manufactured specifically for the task at hand. They are best produced from steel with a carbon content of 0.8 percent or less. If nothing else is accessible, motor vehicle coils and leaf springs are a reasonable alternative. For the use of other professions, smiths are frequently asked to create chisels. To fit specific applications, these need to be hardened and tempered. Sets are utilised for cutting hot and cold metal similarly to chisels. They are just chisels with rods or handles. Although metal rod handles are more common, wooden shafts are easier to handle. These are affordable, simple to create, and fit. Similar to chisels, sets are short and thick for cold work while longer and thinner for hot metal. Once more, these can be produced in a variety of shapes for a variety of reasons.

The blacksmith employs a wide variety of tong types and designs. The workpiece needs to be held securely by tongs without moving. They frequently vary in length, size, and weight since different metals have different diameters, and are frequently created for a single task or modified for a given workpiece. While tongs are often created by smiths from mild steel, it is an excellent plan to begin with at least a couple of pairs that have previously been made. Hot work punches can be practically any form to suit the task, including round, square, and others. Punches can be equipped with grips and should be large enough to keep hands away from the heat reflection. They are often made to remove the least amount of metal from the task possible. Drifts resemble quick punches. They are precise in size and shape, constructed from carbon-tool steel, and can be circular, hexagonal, octagonal, or virtually any other shape. The metal is typically only heated to a dull red temperature when they are hammered through the job to finish a hole to size and shape. To facilitate the task and provide a nicer finish, a little grease can be added.

Fullers come in a variety of sizes and have edges that are rounded, just like chisels or sets. Smaller sizes can be carried in the hand, whereas bigger sizes need shafts or handles and are sledgehammered. Typically, fullers are constructed in pairs. The toolhole of the anvil can accommodate the bottom fuller. They are employed for drawing or moving metal in a single direction as well as for laying down shoulders before forging tenons. Swages are the top and bottom tools used while working with metal. The most popular shape is semicircular, and it is used to measure round portions after prior forging. The anvil's toolhole accepts the bottom tool. Top and bottom tools may occasionally be hinged or attached. Set hammers and flatters are placed on the object and hit with a sledgehammer. They have flat faces and either sharp or rounded edges, depending on the requirements. While the flatter is a good finishing tool and should only be used to provide surfaces with a good finish, the set hammer is most frequently used for setting in shoulders.

4.4 Modern metal crafting technologies

Despite being numerous and specialized, modern Metal crafting processes can be divided into three major categories: forging, cutting, and welding. Modern machine shops, sometimes referred to as Metal crafting workshops, are equipped with a wide range of specialised and general-purpose machine tools that can produce extremely accurate and practical products. Several of the more basic Metal crafting methods, like blacksmithing, are still used in less developed nations for artisanal or hobby work or historical reenactment. However, many of these are no longer commercially competitive on a wide scale in developed nations. Various modern metal crafting processes have been described below.

4.4.1 Sheet forming

Processes for sheet (and tube) formation Additionally sheet metal forming processes use mechanical force that is applied at ambient temperature. However, some current innovations involve heating dies and/or pieces. Progressive die pressing is a technique that includes punching, coining, bending, and various other ways below that alter metal at a lower cost while producing less scrap.

4.4.2 Cutting

Cutting is a group of operations where surplus material is removed using various types of equipment to bring material to a desired geometry and produce a completed component that satisfies standards. Cutting yields two things in total: the final part and any waste or excess material. Manual technologies for cutting include: a saw, chisel, shear, or snips and machine technologies are turning, milling, drilling, grinding, and sawing.

4.4.3 Turning

Turning and removing material from a workpiece is done with a lathe machine: Turning is a cutting operation that creates a circular surface. The cutting tool is fed into the rotating workpiece either axially, radially, or both ways. Facing is the process of creating surfaces that are perpendicular to the workpiece axis. Profiling is the process of creating surfaces using both radial and axial feeds. A lathe is a piece of equipment that spins a block or cylinder of material so that it can be shaped using abrasive, cutting, or deformation tools to create something with rotational symmetry around an axis of rotation.

4.4.4 Welding

A fabrication technique called welding uses coalescence to combine materials, typically metals or thermoplastics. To create a robust joint, this is frequently done by melting the workpieces and adding a filler material to create a pool of molten material. However, pressure can occasionally be employed in place of heat or all by itself to create the weld. The energy used for welding can come from a variety of sources, such as a gas flame, an electric arc, a laser, an electron beam, friction, and ultrasound. Welding can be done in a variety of settings, including the open air, underwater, and in space, even though it is frequently an industrial activity.

4.5 Latest tools and Raw Materials for Sarbloh utensils crafting

The equipment and raw materials needed to make wrought iron or sarbloh crafts are as follows:

- **Wrought iron:** It is the main component of this technique.
- **Hammer:** This is used to shape iron sheets into the desired form by pounding them.
- **Welding Gun:** To handle iron, fire must be blown.
- **Gas Cylinder:** To create a flame, the welding gun is attached to a gas cylinder.
- **Lighter:** This device produces a flame.

- **Cutting Pliers:** These are used to meander and cut iron.
- **Measurement Scale:** It measures a variety of objects, including sculptures and sheets of wrought iron.
- **Metal Buffing Brush:** This buffing equipment is used to provide the sculpture with smooth surfaces.
- **Angle Grinding Machine:** This portable power tool is used for polishing and grinding (also known as abrasive cutting).
- **Power Drilling Machine:** This power tool is portable.
- **Black Enamel:** This shade serves as the foundation of sculptures.
- **Adhesive:** This substance is used to attach sculptures to frames.
- **Drawing Paper:** Before sculpting, figures are initially sketched on drawing paper.
- **A pencil**: it is used to make drawings.
- **A metal cutter**: it is used to cut sheets of metal.
- **Late Machine**: The purpose of a lathe is to conduct multiple operations on a workpiece by rotating it around an axis of rotation while using tools to cut, sand, knurl, drill, distort, face, and turn the component to produce an object that is symmetrical about that axis.

  Woodturning, manufacturing, metal spinning, thermal spraying, reclamation, and glass working all involve the use of lathes. Pottery can be shaped on lathes, with the potter's wheel being the most popular design. Many solids of rotation, plane surfaces, and threads for screws or helices can also be produced on the majority of adequately equipped metalworking lathes. Stunningly sophisticated three-dimensional solids can be created on ornamental lathes.

  One or two centers, at least one of which may often be shifted horizontally to suit various workpiece lengths, are typically used to hold the workpiece in place. Alternative work-holding techniques involve clamping the work to a faceplate with a clamp or a dog clutch or attaching it to the axis of rotation with a chuck or collet. Screws, candlesticks, gun barrels, cue sticks, table legs, bowls, baseball bats, pens, musical instruments (particularly woodwind instruments), and crankshafts are a few examples of items that can be made on a lathe.

Figure 4.2: Gas welding, Oxygen cylinder

Figure 4.3: Gas welding torch connected to two gas hoses, one of the hoses realizes LPG while the other oxygen.

Figure 4.4: A buffing machine is used to smoothen the metal surfaces

Figure 4.5: A grinding machine is used to remove excess pieces from the craft after welding.

Figure 4.6: Metal sheet cutter

4.6 Product details of Sarbloh Metalcraft in Gharuan

Gharuan village is located in the SAS Nagar or Mohali districts of Punjab. It is roughly 8 miles from the Kharar sub-district headquarters and 15 kilometers from either the Mohali or SAS Nagar district headquarters. The community spans approximately 1429 hectares in total area. 6,302 people are living in Gharuan overall, 3,324 of whom are men and 2,978 of whom are women. A community of ironsmiths who make metalcraft out of sarbloh has lived in Gharuan village for a long time. As the seventh Sikh Guru, Shri Guru Har Rai Sahib is credited with bestowing the Sarbloh utensils on the village of Gharuan during one of his visits. The ironsmiths of the village are said to have received blessings from Guru Sahib for the unusual task of creating Sarbloh kitchenware, which is crafted entirely of pure iron. The town's ironsmiths received a blessing from Guru Sahib, who promised that their ability to create Sarbloh utensils would be exceedingly lucrative and that they would fetch prices comparable to gold, rendering this village the only exclusive hamlet producing Sarbloh utensils.

A small number of families that have established themselves here have carried on the long-standing practise of creating sarbloh utensils, a craft that has been passed down to them from their grandparents since the time of Shri Guru Har Rai Sahib. During the sacred Sikh baptising process, sarbloh items are used prominently. To become authentic Singhs, Sikhs who are baptised engage in the ‘‘Amrit,’’ which is deposited and solemnised in sarbloh utensils while Gurbani is spoken. This is a custom that dates back to the tenth Guru, Shri Guru Gobind Singh Ji, in 1699. Only in Gharuan are the utensils created, and many families have been actively engaged in this beautiful occupation for many years. The ground visualization of various products that have been made of Sarbloh metal in Gharuan village has been presented below. It has been already discussed in the previous chapter and the present research work has been presented below.

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

(j)

(k)

(l)

Figure 4.7: (a) Kadahi (b) Batta and Chammach (c) Container 1 (d) Patiala (e) Container 2 (f) kadoo kass (g) lotta (h) bowl (i) Container 3 (j) Plate (k) pan (l)Prant

4.7 Metal report of “Sarbloh’’

For the metal report of “Sarbloh,’’ the author has conducted a test known as “Scanning Electron Microscopy’’. In this test, using a beam of electrons to scan a material creates an enhanced picture that can be used for examination. In failure analysis, dimensions analysis, contamination analysis, particulate analysis, and reverse engineering, the greatly enlarged images offer a strong and efficient micro-analysis technique tool. It is frequently used to identify the mode and mechanism of metal from the images. In particular for metallic materials, whose properties are intimately correlated with their microstructure, experts have long used this method to analyze the attributes of materials. The metallic sample’s macrostructure can be examined using a scanning electron microscope, and a preliminary understanding of the substance’s general morphology can be obtained. The amount of segregation, toughness, flexibility, and roughness of the material can be determined via the phase distribution, size of grains, additives dispersion level, degree of dispersal of additive, presence of loose shrinkage cavities on the surface, etc.

By concentrating an electron beam on a specimen’s surface, the technique of scanning electron microscopy creates images. A picture can be produced by integrating the scanning trajectory of an electron beam and the magnitude of the detection signal because the interaction between the atoms of the sample and electrons produces a range of signals that provide information about the surface shape and composition. Using the same method the obtained report of “sarbloh” metal has been shown in the following figure.

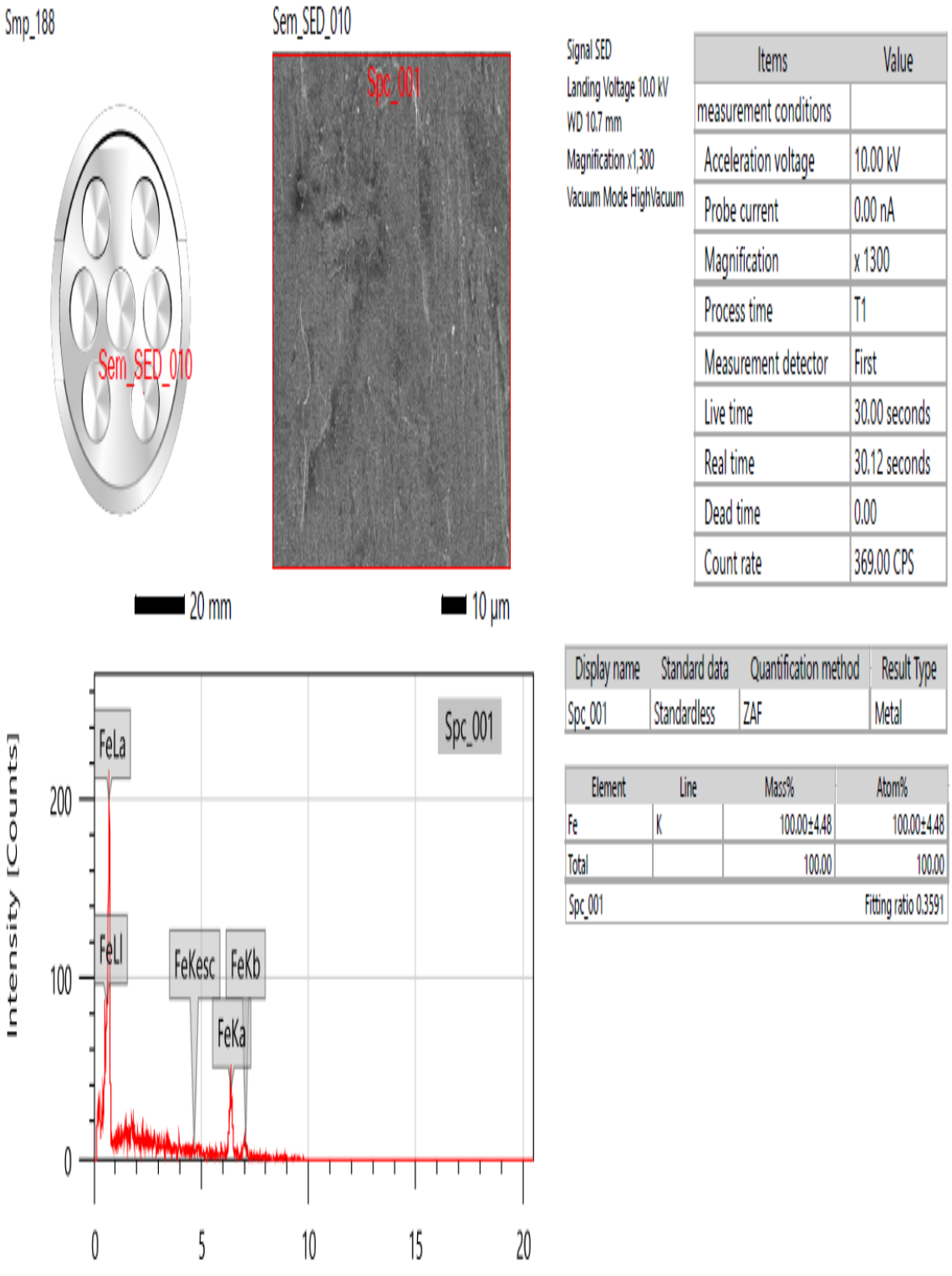


Figure 4.8: Scanning electron microscopy (SEM) report of "Sarbloh''.

4.8 Traditional market system

Iron smithing has been the many people in India traditional profession. They generate iron using the easily accessible iron ore in the area and utilise it in their craftwork and art to create artifacts, tools for agriculture, and other items. They produce and sell sickles, axes, ploughshares, arrowheads, spearheads, nails, and other items in the neighborhood market. Previously, the iron smithing tradition was practiced by each member of the family. First, they use surface investigation before buying the iron. They were skilled in identifying high-quality iron ore or Sarbloh. They begin working after offering worship to God. They typically gather iron ore that is radish-brown in appearance. They categorise iron ore into numerous categories in their regional dialect.

However, selecting and gathering iron ore has been done very perfectly by these ironsmiths, but their business has been highly impacted by the marketing of their product in the past. In general, numerous activities are involved in marketing, such as marketing study, product development, distribution, pricing, promotion, individual selling, sales promotion, etc.

To detect, serve, and satisfy consumer requirements while achieving the true objectives of the business, marketing incorporates various numbers of tasks. Ironsmith businesses, which were typically run by lone proprietors, cannot afford to create a distinct, well-organized marketing structure. With the assistance of their family, they were only able to manage all of the daily operations. They spend most of their time working on the production. If they had some spare time, they used it to buy raw materials. They typically lack expertise in the market and information about their items. The only way of selling their goods was at the local market, fair, or Hindu festival. The following marketing channels were typically used to sell most of the products by ironsmiths:

1. Home-based sale.
2. Local shops
3. Third parties
4. Fairs and festivals

4.9 Development in the recent market system

A strong marketing strategy can boost output and improve the livelihood of craftspeople and ironsmiths. The following marketing channels are typically used to sell most of the products by ironsmiths:

1. Home-based sale.
2. Local shops
3. Third parties
4. Fairs and festivals
5. Government retail stores.
6. Supply based on a contract or order
7. Cooperative societies are Exporters, which include both public and private businesses.
8. Retailer sales

In addition to this, if a modern marketing system is adopted, the sales and profits of the products made by ironsmiths can be increased. Modern marketing uses a comprehensive, flexible, data-driven process to link businesses with their ideal consumers and get specific commercial outcomes. To reach that level of personalisation, modern marketers must have a thorough understanding of their target market. The five modern marketing pillars Product, Price, Development, Place, and People serve as a framework to direct marketing initiatives and maintain attention to marketers on important issues.

A few of the greatest and most often used contemporary marketing techniques today include the following examples: Email advertising, Internet advertisements, etc. Websites are used for online shopping, and utilising social media platforms such as Facebook, Twitter, and Instagram for optimisation for search engines (SEO) is a key component of modern marketing systems. However, ironsmiths are not availing of such methods of modern marketing. Marketing presents many challenges for ironsmiths. Because of their limited financial means and tiny business size, ironsmiths cannot engage in commercial exposure. The Corporation is advised to strengthen marketing and publicity efforts for all the products. By buying goods from ironsmiths at fair prices and quickly making payments, the Corporation should free the ironsmiths from the abusive grip of middlemen. However, the government has not played such a crucial role in resolving the marketing issues faced by ironsmiths.

Other than this, the vast majority of ironsmiths are unaware of new initiatives in marketing. It is their sole responsibility to be informed about the various welfare promotional programmes and to put those programmes into action aggressively.

4.10 Survey details

The sample of the study was drawn from the small town "Gharuan'' in the district of Mohali in the Punjab region of India and the regular users of Sarbloh utensils. Gharuan has a total population of 6,302 individuals, 3,324 of whom are men and 2,978 of whom are women. There are perhaps 40 ironsmiths (or 10 houses) in all. In the village of Gharuan, these ten households of iron smiths have carried on the ironworking profession of their ancestors. Creating Sarbloh utensils is a long-standing tradition that has been passed down to them from their ancestors since the time of Shri Guru Har Rai Sahib. Such families were interviewed for this study to support various components of it. The author has primarily concentrated on the demographic analysis of these families and users. Social dynamics are fairly well described by socio-demographic parameters. A descriptive analysis of these variables may show changing demands and upcoming pressures in the areas of health, education, marriage, work, and professions, among other things. Other social variables can also be explained by these background elements. Each of these ten families has one representative in the current survey. In total, 40 samples have been collected from ironsmiths and 500 from the metal users. All 540 respondents came from families of ironsmiths in Gharuan and the Sarbloh metal users. 22 residents of the village's seven homes were above the age of 55.

We specifically selected this age group because it is expected that they have experienced changes over the past 50 years. 40 males and 0 women were selected as respondents from ironsmith families after a careful selection process. On the other hand, 500 users of Sarbloh metal were selected of which 356 were male and 144 females. A schedule comprising both open-ended questions was developed for interviews with participants 55 years of age and older. Our conclusions are based on descriptive and trend analyses. One decade is used as the starting point to assess the changes over time. In traditional communities, joint families continued to support elderly relatives economically. The respondents' selected age distribution led to the discovery that six of them lived in joint families and four belonged to nuclear families. As could be predicted, the majority of older respondents resided with their married children. More

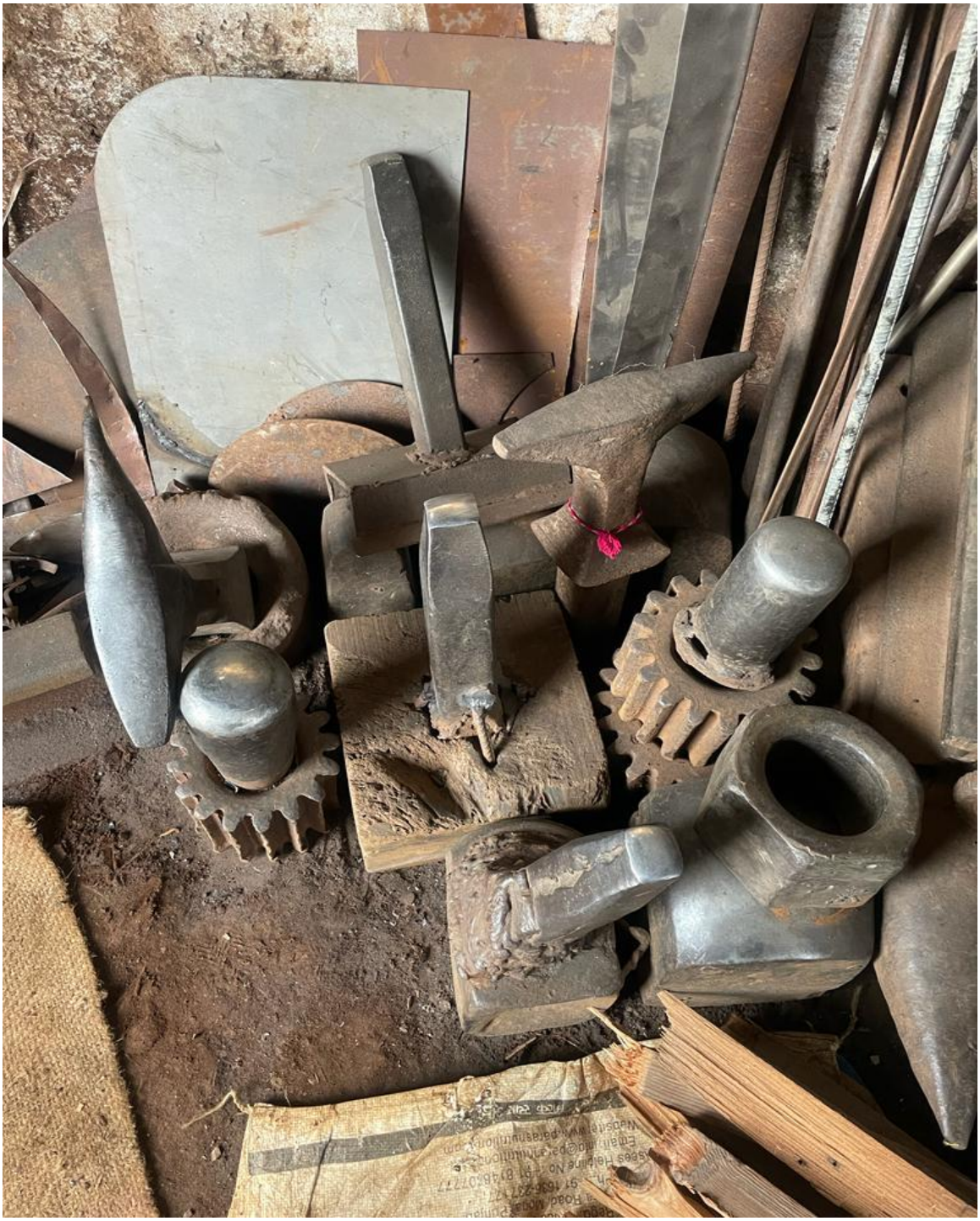
than one responder (male or female) from the same home was questioned in several cases. The household was regarded as one in these cases to avoid any duplication. The primary data has been collected in the form of a questionnaire and interview questions from an ironsmith in Gharuan Village and the users of sarbloh metal. Our questionnaire contains open-ended questions as already mentioned. The whole questionnaire has been divided into two parts. The first part contains the personal information of the respondent (demographical), and the second part contains the question related to metalcrafts. A sample questionnaire along with the response of a single respondent has been given below. In section one of the questionnaire, questions such as personal information of respondents including name, sex, questions on their social history on age, religion, material status, literacy level, and socio-economic variables including annual income, tax status, prime source of their income, family type (joint or nuclear), nature of house (kacha, pucca, mixed, and other), status of home (own, rented, and other), and sanitary facility at home or not were asked.

Other than this, in Section 2, questions were asked in the questionnaire on how long they have been practicing Sarbloh metalcraft production, the types of products they have produced, the time taken to produce such items, any governmental aid they have received, the existence of any special policies to help the ironsmith community, the tools, and technology they have used for the production of an item, the utilisation of Sarbloh metalcraft, experience with the use of metals, etc. As per the detailed responses received from the 40-sample questionnaire distributed to the respondents, the respondents are mostly male, older than 40, married, belong to the Sikh religion, and have education levels ranging from secondary to intermediate. Further, the responses on their socio-economic variables demonstrate that they have incomes of 50,000 and above but are not taxpayers. The prime source of their income is Sarbloh. Respondents are mix categorized by family type (joint or nuclear), as six of them lived in joint families and four belonged to nuclear families. Most of them have pucca houses, which are sanitary facilities, and they are the owners of them.

In response to part two, it has been observed that for a long they have been practicing Sarbloh metalcraft production as their ancestors were doing the same (meaning it is their family profession), the types of products they have been producing are household utensils, Kara (bangle) and Bata (bowel), and producing two pieces sing hammer and cheasel. As such, they

do not receive any governmental aid and are not aware of any special policies to help the Ironsmith community. The glimpses of Rupinder Singh (respondent), an ironsmith of Gharuan village have been shown below.

(a)



(b)

(c)

(d)

Figure 4.9: (a) Respondent making metal craft (b) Tool of Respondents (c) Product made by Respondent (d) Other tool of Respondents.

Chapter - 5

Chapter 5

CONCLUSION

5.1 Conclusion

In accordance with the results of the national-level brainstorming sessions of the Working Committee on Crafts under the chairpersonship of Laila Tayebji and Gulshan, it has been concluded that wherever any craft has found significance, importance, utility for the people themselves, and an aesthetic appeal to those who head to that land as visitors and keep it in the form of a valued artifact, it will survive. To decide how to move forward, these training sessions were organised with artisans and related stakeholders around the nation. The present research has been focused on a detailed and comprehensive study that looks into the details of various aspects related to Sarbloh metalcraft in Sikhism and Sarbloh metalcraft. Sikhs value Sarbloh highly because of the emotional significance it holds for the Khalsa. As the Khande Di Pahul (ambrosial nectar), which was used to start the Khalsa, was made in the Sarbloh Baata (bowl), eating at Sarbloh signifies, for many Sikhs, ingesting the substance from whence they were formed. In a broader sense, Sri Guru Gobind Singh Ji instructed the Khalsa to always carry the 5 Kakaars, and these 5 Kakaars are made of sabhloh metal. Further, according to Sikhism, wearing expensive metals like gold and silver is a sign of materialism.

In contrast to this, it is preferred to wear Karas made of simple metals like Sarbloh or steel rather than Karas made of gold or silver because Sarbloh urges a Sikh to preserve humility and refrain from the five vices (lust, anger, greed, attachment, and ego) because Sikhi is above all of this. Gharuan village is known for Sarbloh metalcraft. The 7th Sikh Guru, Shri Guru Har Rai Sahib, is credited with bestowing the Sarbloh utensils on the small town called “Gharuan’’ during one of his visits. The ironsmiths of the village are said to have received Guru Sahib’s blessings for the unusual task of creating Sarbloh kitchenware, which is crafted entirely of pure iron. Sarbloh is a compound word where “sarb’’ stands for everything and “loh’’ stands for iron.

For the present study, the chosen method of research is descriptive research. The author has conducted a survey on ironsmiths in Gharuan village, Punjab, and the users of Sarbloh Metalcraft to test their level of attention to the various aspects available in the questionnaire regarding sarbloh metal crafts. From the questionnaire response, it has been observed that a small number of families who have established themselves here have carried on the long-standing practise of creating sarbloh utensils, a craft that has been passed down to them from their ancestors since the time of Shri Guru Har Rai Sahib. In total, there were 10 houses of ironsmiths in Gharuan village, and 22 people over the age of 55 lived in the 7 houses. Other than this, 500 sarbloh users, of which 356 were male and 144 female. Specifically, men have been working in this area. It has also been observed that the types of products they have been producing are household utensils, Kara (bangle), and Bata (bowel), and two pieces they have been making daily using a hammer and cheasel (conventional method). All the ironsmiths are not well educated and live in poucha houses. They even do not get much value from this profession, but they continue it because their sentiment has been attached to it.

Additionally, the major findings drawn from these studies composed of limitations, challenges, stresses, and threats that a people's rural industry or declining handicraft industries face are a reflection of "small enterprise development as an entire in countries that are developing.'' A comprehensive set of solutions is needed to address concerns with marketplaces and advertising, raw material accessibility, availability of financing, technological advances, training and education, and institutional structures for promoting rural handicrafts as a livelihood strategy (Rogerson, C. 2000). Crafts contribute significantly to the varied of locals and numerous means of subsistence. More precisely, it is a significant contribution to a rather wide portfolio of research on rural livelihoods that frequently includes the investigation of various land-based arable farming practices, including cattle husbandry. Off-farm revenue sources, including labour, wage employment, suppliers, and migrants, would additionally be included. Although the economics of the "trade-in craftsmanship is poorly comprehended'' (Makhado, Z., & Kepe, T. 2006), it has been acknowledged by many in research and projects. This is notably evident among part-time artisans and craft businesses, who have offered a modest but ultimately vital source of income to the communities surviving together, especially in rural places.

The market promotional support for these products can give the artisans the critical incentives they need to keep practising and passing down their traditional skills to future generations, which might otherwise have vanished. Although the spread of crafts could have some adverse local effects on particular resources, it needs to be recognised that crafters have gradually developed strategies and key practices for sustainable resource management, ensuring that the assets are not in danger of being completely depleted. External variables, however, are what hinder the successful spread of these assets. They have an impact on the outside world and cause issues that, at best, might have been avoided or quickly fixed if the proper steps had been taken to improve the situation immediately.

Furthermore, as we know crafts contribute significantly to the locals' varied and numerous means of subsistence. In particular, it is a significant contribution to a rather wide portfolio collection of rural livelihoods that frequently includes the investigation of various land-based arable farming practices, including cattle husbandry. Off-farm revenue sources, including labour, wage employment, vendors, and migrants, are also included. Even though it has received widespread recognition in both economic and research endeavours. The important points emphases the same are,

1. This is especially apparent among small-time artisans and craft businesses, which have offered a modest but ultimately vital source of income to the communities that have survived together, especially in isolated places.
2. The market promotional support for such goods can give the artisans the critical incentives they need to keep practising and passing down their traditional skills from generation to generation, which might otherwise have vanished.
3. Although the spread of crafts could have some adverse local effects on particular resources, it must be recognised that crafters have over time developed strategies and key practices for sustainable resource management, ensuring that the resources are not in danger of being completely depleted.
4. External variables, nevertheless, are what hinder the successful spread of these resources. They have an impact on the wider community and cause issues that, at best, might have been avoided or quickly fixed if the proper steps had been taken to improve the situation immediately.

For this, some encouragement for the crafts movement can also be considered for example "UNESCO plays a role in encouraging creative educational ideas relating to producing novel goods, new wrapping, innovative advertising, and leadership techniques for small businesses while emphasizing training for women and youth" (UNESCO 2006). This would significantly improve the hands of craft communities. It could serve as an additional support system for their cultural traditions and mores.

5.2Key observations from the study

1. Although the newest order or younger members of ironsmiths exist, the elder order is not prepared to accept them into the profession. Although the elder ironsmiths are proud of their abilities, they do not believe that the next generation will pursue this line of work. The majority of their dependents are salespeople for clothing stores or electrical and technological stores. Some of them are even employed as day labourers or in general employment.

2. The Ironsmith is 50 years old on average, with their youngest member being 27 and their oldest member being 78. This shows that the professionals are getting older and there is not enough younger talent to take their place, putting the craft in danger of extinction.

3. The daily earnings of ironsmiths range from Rs 200 to Rs 350, with Rs 150 serving as the average and Rs 350 serving as the maximum.

4. Education-wise, the majority of ironsmiths have completed classes up to the eighth grade (Class VIII). The vast majority of them started honing their trade well before turning 18. A lot of them went to work with their fathers and took on apprentice roles to learn the craft. But none of their family's offspring are interested in carrying the family's father's business, given the downturn it has experienced over the past 10 years. They would choose to work as salespeople for a daily income or as mechanic shop apprentices. However, the children of Thathera do not have a strong desire to pursue further education.

5. Regarding their financial situation, their dependent population is also important. Each household has, on average, 3-5 kids. The maintenance of the household including the provision of necessities and the pursuit of further education of children, is greatly impacted by the meagre incomes.

6. Numerous health risks are connected to this metal art. Metal fumes, which are released into the air during the process of smelting scrap, the main raw material in such processes, have an adverse effect on plants and animals since they do not decompose in the environment. Due to their exposure to gases and dust throughout the production process, several ironsmiths had respiratory issues.

7. The ironsmiths are capable of creating a wide range of utensil types. There is now relatively little demand, thus they are only able to produce a small number of products.

8. Small orders from various sections of the country have also significantly hindered their operations. At one time, they were receiving orders from numerous locations across the state and the nation, including various regions of Punjab and Rajasthan, Lahaul-Spiti, Gujarat, Jagdhari, Delhi, UP, and J&K.

9. Some of the enormous crafts of sarbloh are still in use in Punjab only. They use it daily although this practice is waning and there is minimal demand. They are thus only produced on demand.

10. The ironsmiths are open to acquiring knowledge about and creating new things, but they are currently concerned that the expense of the design development exercise may become prohibitive due to rising prices.

11. It is obvious that the ironsmiths are in a crisis; while they recall happier days when raw materials and production procedures were more within their control, they are currently

on a downward trajectory and have no control over their manufacturing facility and foundry. They are unable to pass on their knowledge to the following generation, which suggests that the skill will perish after them. Further elimination of coal and trash subsidies, higher labour expenses, as well as the rising cost of living and the more recent demands of lifestyle aspirations, are extra issues they faced.

5.3 Challenges in the Sarbloh Crafts Sector

The development of the sarbloh industry confronts several risks and obstacles despite its importance to society. With the use of effective policy measures such as:

1. The majority of the workers work alone, which results in scattered production and wasted effort. Additionally, there is no formal collective structure because all operations are decentralised, which reduces efficiency and productivity. For the workers to participate in various government programmes and departmental programmes, efforts should be taken to formalise them into organisations and institutional structures.

2. As was evident in the analytical section, most craftsmen come from economically disadvantaged backgrounds, are heavily indebted, and frequently run into difficulties due to an absence of resources. The difference between their daily income and the necessary amount of money is enormous. Following the XII Five-Year Plan for Handicrafts, numerous programmes, and services have been launched by the government and several other institutions to assist crafters.

3. The sizeable, unorganised, and unregulated industry is highly dependent on external support elements in the supply and input chains, necessitating its empowerment. These outside forces include retailers who take advantage of craftspeople for their gain. Situations can be improved by introducing formal, ordered structures of function.

4. Manufacturing capacity and product quality are constrained by antiquated, ineffective technology and methods of manufacturing, like in the case of the Ironsmiths of

Gharuan, Punjab. The size of the sector is significantly influenced by infrastructure investments, public amenities, transportation expenses, unstable power supplies, a shortage of work sheds, warehousing, etc.

5. Even though the demand for handmade products is enormous, diverse, and mostly driven by consumer demand and requirements. Despite the considerable demand, it is not provided because the majority of the craftspeople cannot access markets outside of their local area. The craftspeople are reliant on intermediaries or traders. To facilitate the development of the overall sector, further links are needed.

6. Mechanisation processes have swamped the market with manufactured goods. Large-scale unemployment as a result of the introduction of stainless-steel utensils is one bad outcome.

7. Old designs are being replicated and copied by the ironsmith. Two different technology advancements could advance this area. There are hard technology inputs like infrastructure improvements and soft technology inputs like branding and design, both of which will unquestionably increase productivity.

Therefore, the Sarbloh craft industry must focus on the environment, fostering enterprise, developing business management and costing principles, increasing production and productivity by providing infrastructure and technology, putting an emphasis on marketing and branding, and facilitating access to finance. There is an urgent need to concentrate on overall development.

5.4 Policies in favour of crafts

The policy and cultural subsistence of government writs on the continued existence and sustenance of crafts in general and handicrafts, in particular, are directly impacted by some of the findings from the research. Having all of their necessities at discounted rates or by way of

loans with a built-in opportunity to purchase and sell within the same financial institution was very important to the craftspeople. The effects on the handicrafts policy structure would be:

- **Grouping of the Ironsmiths**

A person cannot sustain a business for a very long time through self-sufficiency. The subsequent actions must be carefully examined, paying close attention to the position of the craftspeople and their perspective on the various tasks. The hand-beaten metal artisans known as “Ironsmiths’’ of Gharuan can be divided into the following categories:

- **Joint Liability Groups**

These groups of 10 to 12 people come together and decide to collaborate as a single, cohesive body. They can go to a bank and, following the present financial conditions, split the responsibility of a loan obtained jointly under their group’s name. The group can jointly reimburse the cost of the loan through regular payments made in manageable increments after using it to purchase raw materials or pay for other expenses that the “Ironsmith’’ would otherwise find difficult to handle. You may use this loaning option as often as you like. There is a strong probability that the JLG will continue to increase its engagement in manufacturing and procurement after the group has shown its legitimacy.

- **Self Help Groups**

Among artisans, this idea of 10 to 15 like-minded people coming together to support a microbusiness is gaining a lot of traction because each person can advance following his or her unique genius. Even though the group works as a unit, there is security in numbers. In this case, the group borrows money, but the money can be divided among individuals following their needs, or they could even borrow money alternately. In this way, a number of the members take out the loan, and they can use the money however they see fit to expand their business and pay for whatever bills they may have. The ironsmiths can attend far-off events and even purchase goods based on their needs thanks to the support of the schemes. The loan amount keeps growing, which is an interesting feature of lending under this umbrella. The initial loan is equal to four times the total micro-savings. Once this is satisfactorily returned, another one is sent out approximately seven more times, and so on, until all needs have been

satisfied of the group members. Some schemes have progressed from being small, fledgling businesses to becoming sizable, well-established businesses.

- **Activity-based Groups**

This is a type of group wherein everyone participates in a specific activity, such as the Ironsmiths. Together, they may make purchases, buy supplies, pay for travel and other costs, and take care of sales and marketing by creating the necessary promotional materials. The financial institution recognizes this activity group as such, and it also works to promote it by supporting and promoting various regional, national, and global expositions and trading or sale possibilities. Thus, each of the aforementioned groupings offers specific advantages to the craftspeople. However, there remains a sizable gap since people are ignorant of these categories. Financial institutions and civil society organizations must consider the information needs of the artisans and assist them in obtaining whatever they may require at whatever time it is needed. The major issue that has to be addressed is the lack of knowledge and education regarding these schemes. The devoted NGOs can easily accomplish this in collaboration with the various funding institutions.

- **Storage of Raw Material**

Because the primary source of raw materials for ironsmiths is scrap iron, they constantly require a supply of this material to play around with the metal they create and the items they must construct. Despite their extensive experience, they have been unable to establish a central pool or bank for raw materials for the following reasons:

1. Not any of the ironsmiths in Gharuan have the resources to buy substantial columns of scrap at public auctions.
2. The hand-beaten iron artisans could hold up to 20 tonnes of raw material in their units, exceeding their highest holding capacity. They would require a larger storage facility to accommodate a larger holding, and this could only be authorized by the government. A large facility for storing different types of raw materials could be built in some areas under the control of the Municipal Corporation. The entire community’s immediate and long-term needs might be met by this cutting-edge institution.

3. To make sure there was enough room to store the final goods as we planned, either this warehouse building or a different one might be built.

- **Wholesale and Retail Sales Outlets**

The majority of Sarbloh crafts have been designed by the ironsmiths of Gharuan, Punjab. Only a small portion was produced and sold in a few places, such as Punjab, Rajasthan, Himachal Pradesh, and Jammu and Kashmir. If these products are to receive more attention, there is a greater need to concentrate on

- A thorough catalogue,
- A dynamic website,
- advertising,
- Quality control,
- Barcoding,
- Advertisements
- In travel-related literature,
- Information in in-flight magazines, and coffee table books are just a few examples of marketing promotion strategies.
- Opening stores at tourist destinations.
- Zone retail outlets are being established in East, West, North, South, and Central India.

5.5 Recommendations

The Department of Textiles of the government of India is in charge of developing, planning, implementing, promoting exports, and regulating all handicraft sector policies. The strategies, which are executed to further the growth of the handicraft industry and so support the economy of the nation, are developed and carried out with the assistance of numerous bodies and organizations. Several of the difficulties have been.

- Policy choices for handicraft activities and the growth of the handicraft industry are limited.
- There is no established regulatory or legal framework for the handicraft industry.
- There are no systematic government initiatives linking tourism, cultural and historical assets, or the promotion of the handicraft industry.

- Lack of a national-level organization of artisans.
- Poor support from organizations that promote business for the handcraft industry.
- zero barcoding
- No marketing is done.
- Marketing of a brand

Internationally acclaimed initiatives like creating stories (hangtags), attending fairs and exhibitions, the development of interactive websites, mobile demos, etc., should be put into practice.

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APPENDICES

PROPOSED INTERVIEW SCHEDULE FOR THE RESEARCH WORK

TITLE- Significance and Dynamics of Sarbloh Metal Craft in Sikhism with a reference to Gharuan village, Punjab

In partial fulfillment of the award of the degree of

DOCTOR OF PHILOSOPHY

IN

History

Submitted by

Gurtek Singh

Supervised by

Dr. Tabish Hashmi

Associate Professor

Department of History

LOVELY PROFESSIONAL UNIVERSITY

PUNJAB, INDIA

INTERVIEW SCHEDULE

Organizing tools for data collection is one of the bases for conducting reliable research, as such the present study **"Significance and dynamics of Sarbloh Metal Craft in Sikhism with a reference to Gharuan village, Punjab".** Aimed to be achieved using a structured Questionnaire to conduct an Interview schedule to acquire in-depth knowledge of the research topic. This is to solicit your esteem cooperation to validate these questions to determine wording arrangements and sequence of questions.

RESEARCH OBJECTIVES-

1. To study the socio-economic status of community of ironsmiths of Gharuan.

2. To investigate the places of Sarbloh metal craft usages.

3. To understand the significance of iron in major religions of the world

4. To highlight designs, motifs and new developments and value appreciation of Sarbloh metalcrafts.

5. To analyse the dynamics of traditional markets and the addition of new markets in view of globalization

1. ***Opening***

A. My name is **Gurtek Singh**, a research scholar from Lovely Professional University (LPU) India with **Reg. No. 12021093** from Punjab State India. I want to interview you in your local language to get the best information about my research.

.

B. I would like to ask you some questions regarding the social demographic profile of ironsmiths of Gharuan village, Traditional technology, Tools, and products of Sarbloh metalcraft, and Usage of Sarbloh metalcraft products.

C. I hope to use this information to help your state and Government to make more efforts to facilitate the Sarbloh production community with new policies regarding traditional crafts and to keep this tradition alive.

.

D. The interaction will not take more than 25 minutes if you do not mind sir/ madam hope you have ample time to respond to these few questions at this time.

Personal data-

Name of the Village, Block, and District

1. Name of the respondent

   ……

2. Gender: Male/ Female/ Transgender ( )

3. Age

   A. Less than 20, B. 21 to 30, C. 31 to 40, D. 41 to 50 E. Above 50( )

4. Religion / Sect ( )

   A. Hindu, B. Sikh, C. Christian, D. Other

5. Marital Status ( )

   A. Unmarried, B. Married, C. Widow, D. Divorced

6. Educational Qualification ( )

A. Literate, B. Illiterate

7. Literacy Level ( )

   A. Primary, B. Secondary, C. Sen. Secondary D. Skill-based course( )

8. Head of the family Annual Income (Rupees) ( )

   A. 20000-30000

B. 30001-40000

C. 41000-50000

D. 50000 and above

E. N/A

9. Do you pay income tax? (i)Yes (ii) No ( )

10. What are the main sources of your family income? ( )

A. Sarbloh Metalcraft

B. Agriculture

C. Agriculture Labour wage

D. Wage Labour

E. Business

F. Government Jobs

11. Type of family ( )

A. Joint family, B. Nuclear family, C. Extended family

12. Size of the family ( )

A. 3, B. 5, C. 7, D. 8 and above

13. Type of craft place ( )

A. Own, B. Rented, C. Other

14.Do you have a sanitary facility craft place? ( )

A. Yes, B. No.

15.Do you have a Sarkari electric connection at the craft production place? ( )

A. Yes, B. No.

16.Do you own rural agricultural land and urban land? ( )

A. Yes B. No

Section II

Related to Metalcraft

Q1. For how long has your generation been engaged in Sarbloh metalcraft production?

Q2. What types of products are being produced at your craft production place?

Q3. What is the usual duration being taken for producing the finished?

Q4. What are the sources from where you collect raw materials?

Q5. Does the Sarbloh Metalcraft community get benefits from the government?

A. Yes B. No ( )

Q6. Are there any special policies that facilitate the Ironsmith community?

A. Yes B. NO ( )

Q7. What tools and technology are traditionally used for crafting Sarbloh metal products?

Q8. Do you find any new developments in production Technology and tools of Sarbloh metalcraft?

Q9. What type of Labour is utilized in the Sarbloh metalcraft?

Q10. How much on average an artesian usually earns in a day?

Respondents Signature……

Mobile no. ……

Section III

Related to the use of Sarbloh from Nihang Singhs

Q1. Do you wear Kakaars made of Sarbloh?

A. Yes B. NO

Q2. Do you use utensils made of Sarbloh?

A. Yes B. NO

Q3. Is there any other product you are using that's made of Sarbloh?

Q4. Since how long have you are using a product made of Sarbloh?

Q5. How do you get knowledge to use the products of Sarbloh?

Q6. Do you carry any weapons made of Sarbloh?

Q7. Do you wear any ornaments of Sarbloh?

Q8. Can you share how you use Sarbloh products in daily life?

Q7. Which features of Sarbloh are most valuable to you?

Q8. Do you recommend/ publicity the using of products made of Sarbloh?

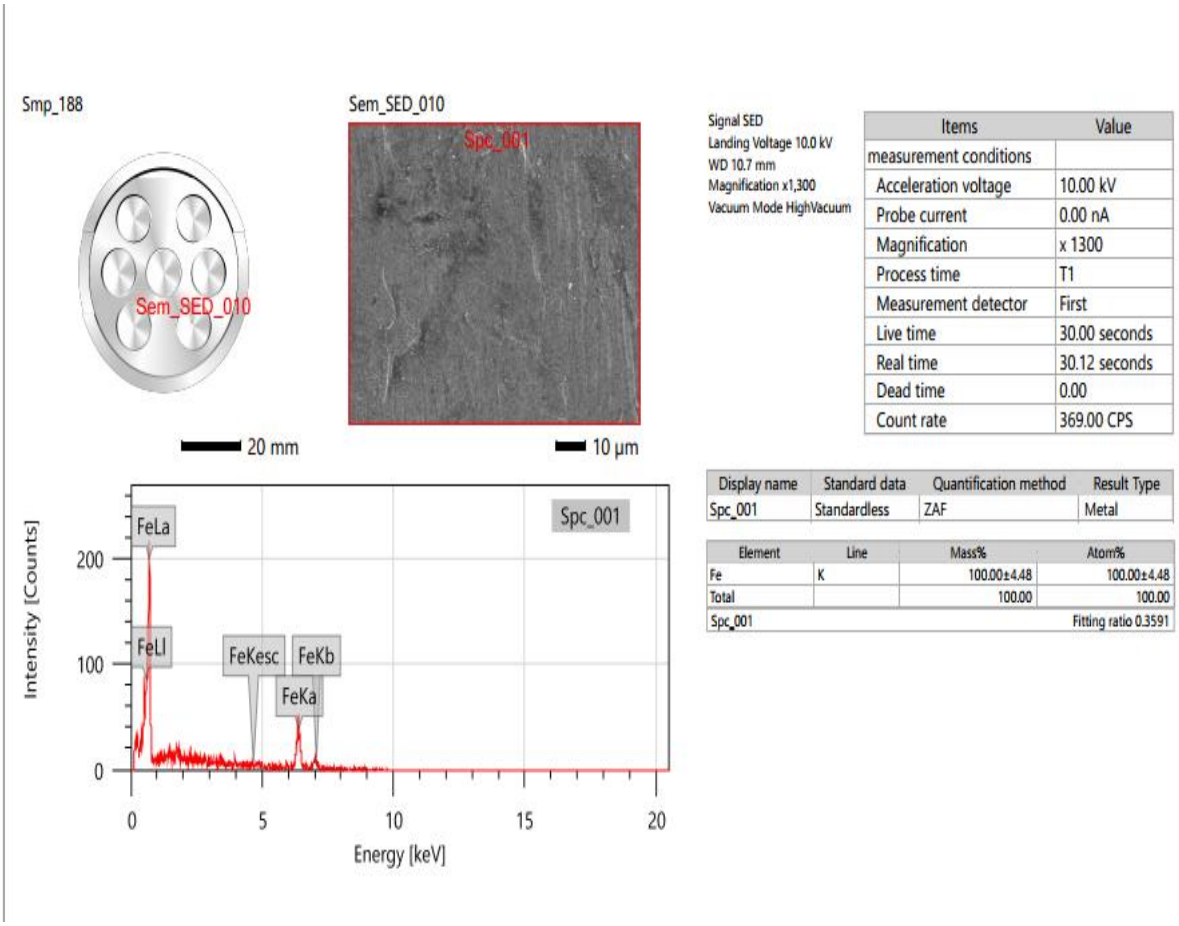
A.Yes B. NO

Q9. How would you compare utensils made of Sarbloh to utensils made of another metal?

Respondent Name /Sign ……...

Mobile no…….

Metal Report



Signal SED
Landing Voltage 10.0 kV
WD 10.7 mm
Magnification x1,300
Vacuum Mode HighVacuum

Items	Value
measurement conditions	
Acceleration voltage	10.00 kV
Probe current	0.00 nA
Magnification	x 1300
Process time	T1
Measurement detector	First
Live time	30.00 seconds
Real time	30.12 seconds
Dead time	0.00
Count rate	369.00 CPS

Display name	Standard data	Quantification method	Result Type
Spc_001	Standardless	ZAF	Metal

Element	Line	Mass%	Atom%
Fe	K	100.00±4.48	100.00±4.48
Total		100.00	100.00
Spc_001			Fitting ratio 0.3591

Certificate-1

ESTD. :- 2021

Pragya Foundation Trust

Jointly With

Department of History & IQAC, Patna College
Patna University, Patna

CERTIFICATE *of* APPRECIATION

THIS IS TO CERTIFY THAT

Gurtek Singh, Research Scholar, Department of History,
Lovely Professional University, Punjab

HAS PARTICIPATED/PRESENTED HIS/HER PAPER TITLED "EMERGING MARKET TRENDS OF SARBLOH METALCRAFT IN GLOBAL TRADE" IN THE TWO DAYS NATIONAL CONFERENCE ON "TECHNOLOGY, TRADE AND ENVIRONMENT: TRANSFORMATIVE ACTION FOR SUSTAINABILITY" JOINTLY ORGANIZED BY PRAGYA FOUNDATION TRUST AND DEPARTMENT OF HISTORY & IQAC, PATNA COLLEGE, PATNA UNIVERSITY, PATNA ON 21 & 22 JULY, 2023.

Mr. Avinash Kumar
Chairperson

Dr. Avinash Kumar Jha
President

Mr. Anup Kumar Jha
Secretary

Certificate-2

University Department of History

B. R. A. Bihar University, Muzaffarpur-842001

INDIAN COUNCIL OF HISTORICAL RESEARCH, NEW DELHI

Sponsored National Seminar

on

THE MAKING OF MUZAFFARPUR : CHANGING SOCIO-ECONOMIC STRUCTURE SINCE COLONIAL TIMES

25-26 February, 2023

CERTIFICATE

This Certificate is awarded to Mr. Gurtek Singh *in appreciation of his/her Participation /paper presentation entitled* Sarblok Metal Craft – A religious and tradional Craft, its usage and its Status in Muzaffarpur. *in the National Seminar on 'The Making of Muzaffarpur: Changing Socio-economic Structure Since Colonial Times' organized by the University Department of History, B.R.A Bihar University, Muzaffarpur during 25– 26 February, 2023.*

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SARBLOH METAL CRAFT - A HERITAGE IN ASSOCIATION WITH SIKHISM

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Dr. Tabish Hashmi Associate Professor, Department of History, Lovely Professional University, India

Abstract-
For centuries, generations of artisans have resurrected centuries-old craft practices, which are now part of a new cultural industry. It is commonly accepted that craftspeople not only preserve cultural legacy, but also enhance and adapt this heritage to meet the demands of modern civilizations. This paper illustrates the significance of Sarbloh metal craft with comparison to other crafts in the literature review section and relevance of sarbloh metal for Sikhism. Although the origin of Sarbloh is unknown, some sources state that the metal is believed to have been first produced in India along the Indus River. However, Sarbloh in Sikhism is historicized differently. There are over 25 million Sikhs, who practice Sikhism, the fifth-largest organized religion in the world. Punjab is a culturally diverse state in India's northwest. A wide range of handicrafts are included in Punjab's Arts & Crafts. There are many skillful and dexterous craftsmen in the Punjab region. As far as Punjabi arts and crafts go, it's all done by women in the countryside. Like the biological evolution idea, religious pluralism is based on the premise of religion's gradual development. Evolutionary theory of religion is the religion of today's Intelligence Age, which explains the relationships between the many faiths and their sacred scriptures. This study will helps to know the how we can analyse the the craft with a vision of religion and culture and also how crafts can shift the phase of cultures.

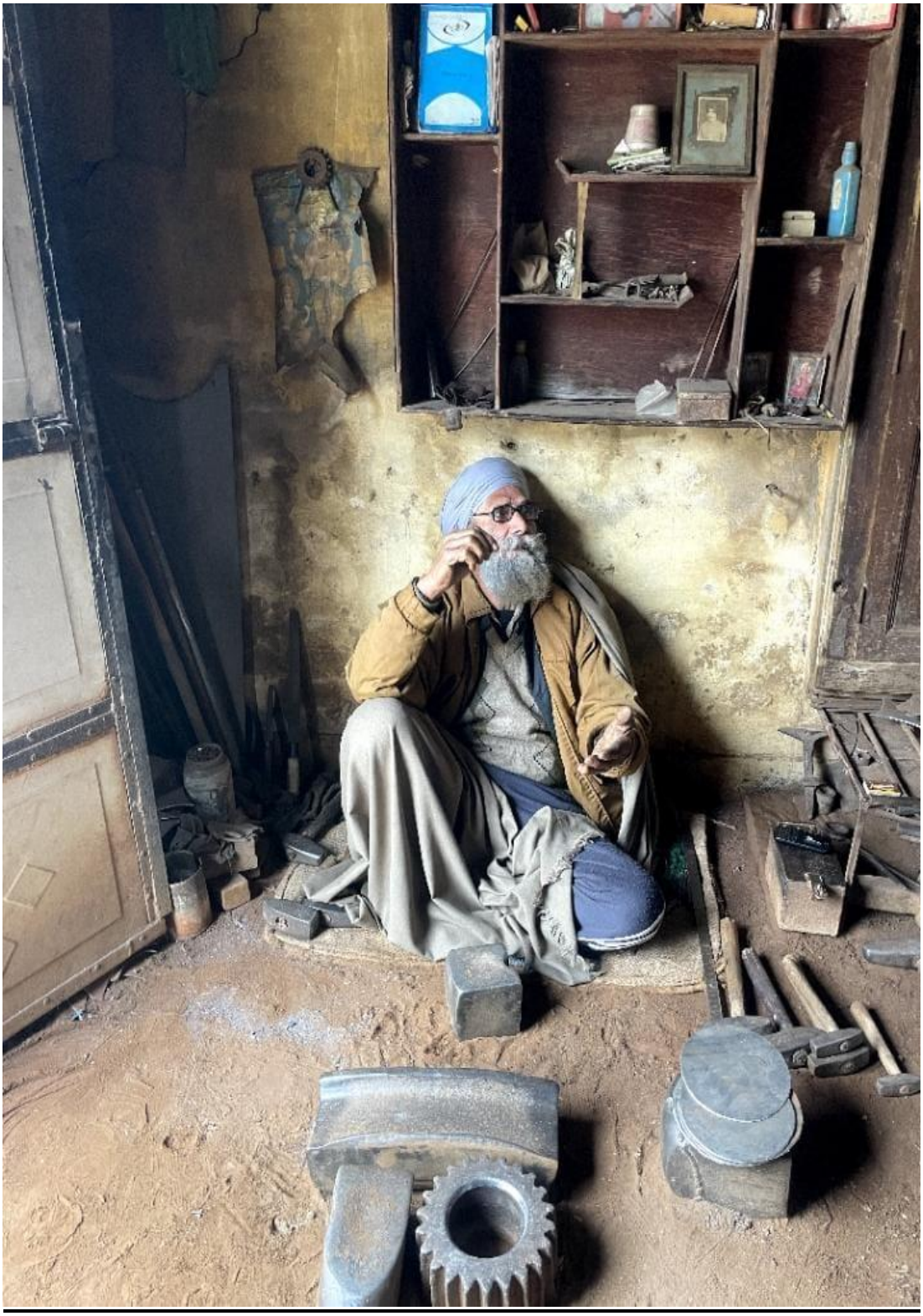
Keywords: Handicraft; India and its Handicraft; Contribution of Handicraft to Indian Economy; Market for Indian Handicraft.

Introduction

"ਸਰਬਲੋਹ" ("Sarbloh", pronounced as: sarablō) is a unique metal; specifically, a high-carbon iron alloy that held (and still holds) great significance in Sikhi, its "Maryada" (code of conduct) and its history.

Photos from data collection


ਇਤਿਹਾਸ ਬੁੰਗਾ ਮਸਤੂਆਨਾ ਸਾਹਿਬ




ਮੋ:- 98726-34169
ਇੱਥੇ ਸਰਬ ਲੋਹ ਦੇ
ਅਤੇ ਅੰਮ੍ਰਿਤ ਸੰਚਾਰ