ARTISANS AND CRAFTSMEN IN COLONIAL PERIOD IN NORTHERN INDIA (1880-1940)

ABSTRACT

OF THE

THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

Doctor of Philosophy

IN

HISTORY

BY

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UNDER THE SUPERVISION OF

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ALIGARH (INDIA)

2008
ABSTRACT

An artisan, also called a craftsmen is a skilled manual worker who uses tools and machinery in particular crafts. Craft is both a method of industrial production and a form of artistic activity. The craft examples produced by the craftsmen are basically utilitarian in which the effort has been made to introduce aesthetic appeal. In early times there was little distinction between fine art and craft. The sculptural and architectural remains of ancient India represent the work of artisans. Only in recent times the fine arts have become more clearly differentiated from the crafts, but the latter in the hands of an excellent craftsmen are still works of art. Before the introduction of machinery every article of domestic use was produced by hand. If a craftsman did his job perfectly, he could easily acquire a patron who normally used to keep him in continuous employment. In a gradually extending world the craftsmen became the keystone of a developing commerce. He organized guilds which absorbed his sons in his trade. For there is a strong tradition of continuity by inheritance in the history of craftsmanship. Particular techniques passed down in families for generations and even apprenticeship was a quasipaternal relationship. Thus the craftsman increased gradually in individually, security, scope
and importance until the invention of machinery revolutionized industrial production.

With the introduction of machinery there has been a lot of change in the traditional craftsmanship even then a worker who produces an article by handwork is still a craftsman in spite of him labour being facilitated by an electric motor, by machine spun yarns or by standard dyes made in big chemical plants. It cannot be denied that the technique of craft may change with the invention of new tools. Its prevalence may decrease as industry becomes mechanized. The status of the craftsman may change as he becomes part of a larger industrial polity.

The study of crafts is an essential key to the understanding of a people’s culture. It cannot be denied that in man’s struggle for existence, artifacts and resources are his greatest assets. In India, the crafts have an importance all their own. They express the great tradition and cultural heritage of our country. The masses of India retain their taste for superb workmanship, as long as they continue to appreciate the value of skilled workmanship. The reason for their preservation and development lies in the fact that they are the material symbols of India’s unique cultural ethos.
As far as craftsman is concerned that it is more concerned with the household art than with the small scale or cottage industries. In the small-scale or cottage industries technical labour or skill is given more importance, whereas in the household art or craft artistic or aesthetic elements play an important role. It is not the craft, but the industrial art which can be put under the category of cottage or small-scale industries. Industrial arts relate to the large or small-scale production of articles primarily utilitarian in which a very little effort is made to introduce aesthetic appeal. They reach their widest significance when their production assumes the proportions of an industry. The field in general is that of the industries producing mechanized and sophisticated goods for personal and household use and decoration such as those concerned with clothing, textiles, glass and metal work. Craft as a method of making artistic goods has its chief significance when it exists in connection with naivety and simplicity of producing requisites of everyday utility for the simple masses of the vast countryside.

The thesis contains five chapters including few appendix and a brief conclusion. Chapter 1st deals with introduction part.

In the second chapter attempt has been made to trace the nature of work and process of artisans in north India particularly in U.P. and
Bihar. In this chapter we trace the tools of textiles artisans, metal artisans and chemical artisans and his nature of work.

Our third chapter describes the impact of technology on the artisans. This work tries to understand how modern industry affected the artisans, especially in countries that industrialized late. It is widely believed that English yarn and powerloom cloth since the mid nineteenth century induced a long crisis for the weavers in Asia, relieved perhaps by a steady cheapening of labour. This crisis has made a particularly strong impression on the Indian textile history. Until recently the best works on the subject did little more than measure the net employment – loss for weavers and these estimates were supposed to test an interpretation of nineteenth century history which said that premature exposure to free trade caused unemployment and economic distress in many colonies.

Chapter four deals with the demographic trends of artisans and craftsmen in north India (particularly U.P. and Bihar). It is totally based on statistical surveys and census report.

In the five chapter we deal with the socio-economic changes of artisans. Was there any mobility of the caste system? Was there good
status in second half of the nineteenth century in north India? These are major issue of this chapter.

In the conclusion, we relate technology to various forms of Indian technology. The introduction of the new technologies by the British, which had direct bearing upon local people, evoked a great deal of interest among them. Two types of technologies were introduced during this period: technologies for the consolidation of British power and for facilitating the export of Indian raw materials viz., steam-vessels, railways, electric telegraphs etc. and technologies to increase the production of Indian raw materials and to improve their quality, viz., agriculture implements, cotton-cleaning machines and the silk filature. Indian response to the technologies falling in the first category was not at all discouraging, as some of the imperialist had initially envisaged. On the contrary some communities, especially the trading community had pressed upon the British to expand the network. Technologies of the second type were introduced without taking stock of Indian conditions. The iron plough, the American ginning machine and the Italian filature system were all turned down by the local users.
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2008
Dedicated to My Beloved Parents
Certificate

This is to certify that the thesis entitled "Artisans and Craftsmen in Colonial Period in Northern India (1880-1940)" submitted by Mr. Shah Nawaz Ansari is the original research work of the candidate, and is suitable for the submission to the examiners and for the award of the Ph.D. degree.

Dr. (Mrs.) S. Chandni Bi
Supervisor
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ACKNOWLEDGEMENTS

In the preparation of the present thesis, I have benefited from the help of a number of teachers, colleagues and friends. It may not be possible for me to acknowledge individually all of them.

It is my pleasant duty to register my deep sense of gratitude to my supervisor, Dr. (Mrs.) S. Chandni Bi for her guidance and cooperation during my work.

I am very thankful to Late Dr. I.G. Khan, who helped me earlier for the pursuing of my research.

I am grateful to Prof. S.P. Verma, Dr. Ishrat Alam and Dr. Parvez Nazir for their many acts of kindness.

I am also indebted to present and outgoing chairman of the Department of History for all kinds of help.

Among my colleagues, I am grateful to Mr. Md. Najibur Rahman, Mr. Rehan Ghani, Mr. Shakil Akhtar, Mr. Mohd. Zafar Minhaj, Mr. Kamal Akhtar and Mr. Mohammad Arshad, who helped me in all manner of ways.

Besides, the staff of National Archives, New Delhi; Central Secretariat Library, New Delhi; Nehru Memorial Museum and Library, New Delhi; and above all to the Research Library of the Centre of Advanced Study in History, I should like especially to mention Mr. Yusuf Siddiqui, Mr. Arshad Ali, Mr. Moin Zaidi, Mr. Mazhar Husain, Mr. Salman Ahmad, Mr. Banshi Dhar Sharma, Mr. Arshad Ali Chauhan and Mr. Zubair for their help.
I am also thankful to ICHR, who gave me financial assistance for the completion of my Ph.D. thesis.

I am also grateful to Mr. H.K. Sharma, who typed my thesis in very short time.

Finally thanks to my Late grandmother Mrs. Ainul Juha bibi, parents Mr. Ali Abbas and Mrs. QKamrun Nisa, uncle Dr. Ali Akbar, sisters Razia and Gulshan, brothers Shahzad and Shahreyar and brother-in-law Mr. Naiyer for their heartful support through the years.

ALIGARH

(Shah Nawaz Ansari)
## ABBREVIATIONS

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<tr>
<td>IESHR</td>
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<td>IHR</td>
<td>Indian Historical Review, New Delhi</td>
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<tr>
<td>IJHS</td>
<td>Indian Journal of the History of Science, New Delhi</td>
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<tr>
<td>JAS</td>
<td>The Journal of Asian Studies, Cambridge</td>
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<tr>
<td>JIA</td>
<td>Journal of Indian Art, London</td>
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<tr>
<td>JPS</td>
<td>The Journal of Peasant Studies, Oxfordshire, U.K.</td>
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<tr>
<td>EPW</td>
<td>Economic and Political Weekly, Bombay</td>
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<tr>
<td>EHR</td>
<td>The Economic History Review, Norwich NR4, Univ. of East Anglia</td>
</tr>
<tr>
<td>MAS</td>
<td>Modern Asian Studies, Cambridge</td>
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<tr>
<td>PIHC</td>
<td>Proceedings of the Indian History Congress</td>
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Chapter - I
INTRODUCTION

An artisan, also called a craftsmen is a skilled manual worker who uses tools and machinery in particular crafts. Craft is both a method of industrial production and a form of artistic activity. The craft examples, produced by the craftsmen are basically utilitarian in which the effort has been made to introduce aesthetic appeal. In early times there was little distinction between 'fine art' and craft. In recent times 'fine arts' have become more clearly differentiated from the crafts, but the latter in the hands of an excellent craftsman are still works of art.

Craft is more concerned with the household art than with the small scale or cottage industries. In the small-scale cottage industries technical labour or skill is given more importance, whereas in the household art or craft artistic or aesthetic elements play an important role. It is not the craft, but the industrial art which can be put under the category of cottage or small-scale industries. Industrial arts relate to the large or small-scale production of articles primarily utilitarian in which a very little effort is made to introduce aesthetic appeal. They reached their widest significance when their production assumes the proportions of an industry. The field in general is that of the industries producing mechanized and sophisticated goods for personal and household use and decoration such as those concerned with clothing, textiles, furniture, ceramics, glass, metal work and the printing industry. Craft as a method of making artistic goods has its chief significance when it exists in connection with naivety and simplicity of producing requisites of every day utility for the simple masses of the vast countryside. The shapes and forms of the craft
examples are mostly traditional but within this tradition there is an individual fantasy. The traditional craftsman produces an object, which in its highest aesthetic form comes from the intimate and organic connection between hand and eye and brain, and the rhythmic movement of the soul.

The Indian craftsmen has been an organic element in the national life. He is seen to have produced two types of craft examples such as rural and urban. In a developing economy the craftsman has to satisfy the need of both the rural and the urban population. The rural folk are satisfied with the simple and less costly objects of daily use, while the urban people demand more costly and sophisticated craft specimen whether they are for decorative or utilitarian purposes.

CRAFT HISTORY

This project work tries to understand how modern technology affected the craftsmen specially in North India during nineteenth century that industrialized late. It is widely believed that English yarn and power loom cloth since mid-nineteenth century induced a long crisis for the weavers in Asia. This crisis has made a particularly strong impression on the net employment loss for weavers and these estimates were supposed to test an interpretation of 19th century history which said that premature exposure to free trade caused unemployment and economic distress in many colonies.¹

This study began from a feeling that the term crisis is inadequate and perhaps some-what arbitrary. First cloth production in hand loom has been growing in the twentieth century, regardless of what happened earlier. Second any account of weaving must admit that this is a very heterogeneous industry. There was no such thing as the weaver in India but many classes of weavers
making many kind of cloth-in-fact. Some of them did not compete with power
loom at all and working under different institutions. Finally one might ask what
rules craftsmen respond to increasing competition and the answer could well
as one could expect anywhere else, innovations in products and methods. We
followed this up and concluded that adaptations did happen but the response
was highly unequal as weavers adapted with different degrees of success.
Decay and growth were both present and they characterized different parts of
the industry. It is this process, in general a widening inequality contrast
between progressive and backward segment that has been the most stable
feature of small-scale weaving, past as well as present.

So far artisans is concerned that there are two type of artisans, rural and
urban. Rural artisans produced mainly for local consumers. Rural industries
included textiles of the coarser kind, pottery, agricultural implements made of
wood and iron, sugar, leather and oil. The main unit of production was the
family and sometimes small collectives of artisan families. The organization of
production was simple and rarely involved extensive division of labour or
specialization by task. Some other rural products such as raw silk, salt, saltpetre
and indigo were produced in the villages by part time peasants but were traded
more widely.

Urban industries included fine textiles carpets and shawls, decorative
metal-ware and pottery, wood and ivory carving, manufacture of arms and
musical instruments etc. The superior economic and political power of the
consumers led to very high degree of refinement in urban craft. Proximity to
power was important for these crafts in two ways consumption and protection
from piracy. By and large, industry and trade in high quality goods were
dependent entirely on the affluence of ruling aristocracies and land controlling elites. Proximity to power also led to economic sub-ordination of producers to the consumers. Some of these crafts were performed in Karkhana (literally factory) or department owned by the courts and other wealthy consumers. Unlike pre-modern, European industry of the towns, the presence of guilds, is almost known in India. Broadly speaking in pre-colonial India every relevant feature of the economy, society and state was designed to hold the artisan family down to his lowly place.

Political decentralization in the eighteenth century dispersed the urban skilled crafts that earlier had a strong bias for a few cities in the Mughal heartland, notably Lahore, Agra, Delhi and Multan. Now skilled crafts flourished or began to congregate in such towns as Banaras, Farrukhabad, Lucknow, Moradabad, Jhansi and Gwalior in north India. Each of these sites was similar to craft towns in Mughal north India in that they flourished because of aristocratic consumption and protection. Nevertheless, the dispersal was significant for the pattern of regional industrialization in the long run. Relative to the rural crafts, the refinement attained by the urban crafts was enormous. This was evident not so much in technology, but in the use of costly materials like gold thread or pashmina. Division of labour and specialization were more advanced in the urban industries. Consequently, craftsmanship reached great height of proficiency.

The social organization of urban crafts was based upon artisan caste – an institution which combined the features of both the caste and the guild. Economic functions of artisan castes were determined by market demand
situation, competition of the craftsmen from the villages or other cities. As a form of medieval corporation, artisan caste regulated technological, organizational and social aspects of urban industries. It occupied a place within the administrative framework of a city and as such it was an instrument of both feudal exploitation and to a certain protection from its most disastrous forms. All members of an artisan caste were equal in poverty, nevertheless there emerged a rather rich and influential elite which organized work and sometimes profited from exploiting its brethren.

Artisan castes were influenced by a number of factors like labour division, diversification of crafts and emergence of the new ones, technical innovation. It resulted in the split into sub-castes, loss of occupation monopoly, professional differentiation within a caste. All these and such like changes failed, however, to result in a crisis of the caste form of industrial organization, which, being in many ways analogous to the European guild system, proved to be much more stable and solid. Caste community was based upon a much wider spectra of relationships than just economic ones. Therefore even when the economic basis of the artisan castes weakened, other relationships (like ethnic, matrimonial, cultural, religious) remained intact and this facilitated the regeneration and stabilization of caste organization.

CONCEPT AND FRAMEWORK OF TECHNOLOGY

The study of technology of a culture in a colonial period, some factors need to be kept in mind. (a) The relationship of technology with the environment, whether it is compatible with it or in conflict with it, (b) The structure and size of the social organization which is supporting the technology and is responsible for using its products, (c) The type of raw materials used
whether they are renewable or non-renewable, (d) the type and source of energy used and the quantum of energy required or consumed to operate the technology, (e) the degree of specialization of operations in a technological system, (f) the relationship of technological operations with other activities are carried out in the society and (g) the degree of diffusion of technological knowledge into the different strata of society.

In addition, four more factors need to be taken into consideration. Firstly, the culture which may condition or motivate the technological development and fuel the hopes, aspirations and vision of the society. Secondly, is the inflow of technological knowledge from other culture area being acquired by alluring those who possess the technological knowledge. Thirdly, is the system through which changes, improvements and developments take place in the technology through trial and error, or input of new scientific knowledge, Lastly the regional and climatic factors which might affect the development of technology must be identified.

For instance, a society located around a river will build an irrigation system, or one in a rain-fed area will build tanks for the same purposes, such a society may regard as backward those societies which have grown in an arid climate for not having an irrigation system. The societies in arid areas may have developed plants that suit their climate and environmental conditions and may be considered advanced in this respect. Similarly those living in arid climates may use underground water resources, through underground water channels, natural or artificial as in Central Asia and they may consider themselves more advanced than those who use open channels where water loss is greater.
The point which emerges from these examples is that the development (or non-development) of a technology needs to be examined in the context of natural environment and the way humans shape the conditions of their existence. Nomads and nomadic tribes may also develop agriculture, though only marginally if at all but they may be better suited to develop the necessary technology for rapid movement. As we know, nomads not only domesticated the horse but also developed the harness for this purpose. And once they developed this line along with armoury as the Mongolians did it enable them to conquer vast lands and associated resources for their own use.\textsuperscript{5}

**IMMIGRATION OF TECHNOLOGY**

A new factor in the development and diffusion of technology was the immigration of artisans and craftsmen. There were many causes for immigration for instance persecution forced many craftsmen to seek refuge elsewhere. As happened in Central and West Asia after the Mongol invasion when large number of artisans and craftsmen sought refuge in India. In India itself, the establishment of the sultanate and of the Kingdom in Gujrat and Bahmani kingdom in the south led to large scale migration of artisans and craftsmen attracted by the encouragement and patronage offered by the new kingdom which offered large incentives to master artisans and craftsmen to settle there and produce artifacts for them and perhaps also train others. Often the fall of a kingdom would also lead to migration from one kingdom to another.

This process of migration had two major impacts. Firstly, there occurred a diffusion of technology from one area to another. For example the Chinese prisoners brought to Samarqand started making paper for the Central Asian
Kingdoms. From Samarqand, the paper technology was brought to Sind in the tenth Century and latter to Kashmir Under the patronage of king Zainul Abedin from where it spread to all over India.6

The second impact was concerned with innovation. When immigrant craftsmen interacted with local artisans and craftsmen, it led to innovation in machinery for example, in textile manufacture or in process, as in the case of transfer of block printing in textiles to book printing by the Chinese thus improving the quality of the product.

Another factor responsible for the spread of arts and crafts within a country was the social mobility of workers from a low status to higher position in Society. There may have been changes in social structure, either due to foreign conquest bringing forth new social ideas or due to reform movements. Such changes released the social energy of artisans and craftsmen, providing an impetus to new developments in technology.

The process of diffusion of scientific knowledge is different from the process of diffusion of technology. The former is either through oral discourse or through the written text, which may lead to different interpretation by different proponents. In case of technology it is through demonstration. The immigrant craftsmen and local craftsmen working together may demonstrate the working of a machine, a process or the making and quality of the product. Working together also erases social inequality as between higher and lower castes. This happened in the Karkhanas of the Kings and nobles where hundreds or thousands of artisans and craftsmen worked together. The master craftsmen had apprentices who not only learned the fabrication and operation of simple machines but also the product manufacture by watching or assisting
the master. Working together also brought new design ideas to modify the machine to improve the product. Therefore a number of changes might have brought about a major change in a simple machine by increasing its efficiency or improving the quality of the product. In operating a machine or using a process, a workman also increases his own skill in operating the machine or in the use of a process improves the quality of the product. In India due to lack of innovation in machinery, the emphasis was more on developing skill in operations to improving the product quality.

Further, the application of technique from one area to another (e.g. block printing in textiles to book printing) may lead to a major innovation. Similarly, the manufacture of a product in one country may stimulate interest in another for a more effective or an entirely different product. For example, the manufacture of land-guns in Europe led to fabrication of Canons or the use of gunpowder in making rockets in India. This is however possible only when the necessary technical expertise is available in a country.

INDIAN RESPONSE TO WESTERN SCIENCE AND TECHNOLOGY

One important aspect of the Indian response to western science and technology during this period is that there was no resistance to its adoption on the grounds of caste or creed. It has often been believed that compared to the Hindus, the Muslims were more antagonistic to western scientific theories. It all began during the early 19th century when the European observers propagate that the Hindus were more receptive to knowledge while Muslims were wedded to their superstitions and dogmas. William Sleeman, for instance, stated that “while the Hindus are showing, readiness, zeal and generosity towards the spread of English education among their countrymen the
Muhomendans seems to have remained completely dormant and indeed took up a hostile attitude towards the progress of English education among them.\(^7\) Falling prey to the imperialist propaganda, one scholar of our own time suggests that "while many educated Hindus were eager to reconcile western ideas to their own inheritance, Muslims remained markedly disinclined for some time to accept the validity of any knowledge not blessed by the Quran."\(^8\)

In addition to the scientific pursuits of the Nawab of Oudh and the Nizam of Hyderabad, the Muslim intelligentsia which was at that stage, struggling for establishing its identity against all odds also responded favourably. Mirza Abu Talib (1752-1806) of Oudh was the first outspoken educated Muslim who recognized the achievement of Western Science and Technology. Accompanied by his doctor friend, Richardson, Talib visited England where he came face to face with the material progress of the English people which he believed, was largely the outcome of scientific technique in the field of industry.\(^9\) He was specially impressed by the English love for machines\(^10\) and their passion for collecting things' and preserving them in well-managed museums.\(^11\) Another notable Muslim who asked his brethren to imbibe the new learning instead of adhering exclusively to the traditional learning was Abdur Rahim Dahiri (1785-1850) of Gorakhpur. Coming from a family of weavers, Dahiri learnt English in the company of one Dr. Martin who was a master of the Persian language. Dahiri was later appointed English master at the Fort William College.\(^12\) He was especially interested in geometry and wrote a booklet entitled Jarr-i-Saqail on the laws and principles of modern mechanics.\(^13\) Muslim poets of the period also appreciated the achievements of the British in the field of Science and technology. Ghalib [Ghalib (1797-1869)
He was the great classical Urdu and Persian poet and writer in India] for instance, was impressed by the manifestation and results of modern scientific knowledge. In a poem written for Akbarnama at the instance of Syed Ahmad Khan, he described the achievements of western Civilisation in which steam and coal as sources of heat and power had a special significance.¹⁴

All these instances of the increasing awareness among the Muslims of Western Science and technology dispel the tendentions belief that the Indian muslims were wedded to their traditional beliefs and that compared to the Hindus they were averse to the new learning. On the contrary we find that there were a few among the Hindus who objected to innovation. For instance, in 1820s when it was proposed to introduce a mathematical class in the Banaras vidalaya to teach the Newtonian and Copernican system of astronomy. Some Hindus feared that it would harm their Sanskrit knowledge.¹⁵ In fact every community had its own standard of judging modern science. Religious affiliations hardly had any impact on the response of the people to the new science. Whatever resistance came, it was from those traditional classes which had long been the sole representative of a particular profession be the Hindus or Muslims.

It would be clear from this study that generally Indians were not averse to the adoption of new scientific theories and the improved technologies. Rather in some instances they had exhibited Considerable appreciation for modern science. Their growing interest in the assimilation of modern science and technology assumes greater significance in the light of the fact that British idea of introducing modern sciences or science-based technology in India was not aimed at the intellectual or material progress of the people of this country.
It was largely a political necessity. The British opened a few scientific seminaries in India, not for turning out engineers or scientists but for preparing a class of flagment, sub-overseers and apothecaries. They brought some new technologies to India not to lead the country to industrialization or modernization but to accelerate the process of its politico-commercial colonization. But still Indians could not remain unaffected by the Scientific activities pursued by the colonial scientist in India.

As for the Indian response to western technology, though Indian artisans and cultivators preferred to work with their traditional implements, they could not be censured as absolutely destitute of enterprise and opposed to all improvements. In fact since the beginning of European contact and down to the end of the company rule in 1858, they had adopted many things from Europe and were continually doing so when it suited their taste and convenience.

**SOURCES**

So far sources is concerned that several overlapping sets of material have been used in this study: government reports, books and articles on the economies of weaving, writings of technologists of art historians and museum curators, the London journal of Indian Art and Industry and the Correspondence of some of the contributors. Sources of statistical data and census report are explained in demographic trends chapter.

A series of reports and surveys on artisan appeared between 1800 and 1880s, reflecting a new interest in crafts related questions. This interest derived partly from a revival in the two million strong handloom industry itself, and partly from growing doubts about the inevitability of India’s march into
machine age. To some extent the availability of this I decided our choice of
period. My work is overall focus on northern India particularly U.P. and Bihar.

The most important source of pre-colonial India is *Ain-i Akbari* by Abul
Fazl. This source is indeed a mine of information on socio-economic situation
in the late sixteenth century India, nevertheless a modern scholar has to our
mind, to be careful while using it. The reason is not only the well-known fact
that Abul Fazl, idealizing his royal friend and patron, ascribed to Akbar some
technological innovations which in reality belonged to some other people and,
glossing over the dark sides of his reign, exaggerated the prosperity of is
domains.

The second half of the 19th Century was distinguished by the Scholars
growing interest in Indian arts and crafts. Due to the predominance of British
machine made goods many traditional arts and crafts either degraded or found
themselves on the verge of disappearance. British and Indian art specialist who
grouped around the *Journal of Indian Art* (its publication began in 1880s)
spared no efforts to describe and study what had previously been despired as
backward and primitive. Their main activities apart from the research one, was
fixation of the dying out technologies and organization of exhibitions symposia
and auctions to raise the public interest in Indian crafts and to support them. In
their analysis of Indian crafts, the scholars like A. Blennerhassett, T. Hendlay,
R. Enthoven, B.H. Baden-Powell, F. Dewar and Eugenia Vanina were free
from hautiness and racial prejudices.

The regular research in Indian crafts emerged therefore as a part of the
art studies. Art historians like Ananda Coomaraswami and T.N. Mukharji
alongwith their British Colleagues Contributed a lot of the knowledge of the
Indian craft techniques and public interest in this sphere. But their interest was by and large confined to fine arts and even in the general crafts which produced the necessities of everyday life. They emphasized the craftsmen’s virtuosity and artistic taste which according to those researchers, atoned for the primitive tools and backward techniques.

Another persons of craft products prepared by the end of the century was George Birdwood, secretary of state in 1885 and patron of many. Another civil servant his contemporary, Edward Buck was interested in silk and tried out some sericulture projects with the help of Thomas Wardle an ex-manufacturer and one of Britain’s best silk technologists of the time, one to whom Birdwood had introduced Indian silks and with initiated a career spent in painstaking research on wild silks. One of Birdwoods achievement was launching the Journal of Indian Art and industry, printed by William Griggs known for his prints on Indian subject and supervisor of a collection of Indian rarities later illustrated to the South Kensington Museum. The heavy illustrated journal appeared between 1888 and 1917. Contributors shared an interest in creative India and a belief in its inner vitality both of which became increasingly rare later. The subjects ranged from painting, sculpture, architecture, jewellery, tiles, beads and calligraphy to more specialized topics. Some of the textiles monographs had first appeared here, as did most of wardle’s writings on silk.

In addition, surveys conducted by Francis-Buchanan in Shahabad, Bihar and Patna, Purnea and Bhagalpur are also provide very relevant information. Besides these, private publications have reports about them.
CHAPTER OUTLINE

The work consist of four main chapters, and a brief conclusion. Chapter second concerned with the nature of work and process of artisans in north India. The outline generalizes from the tools of the textiles artisans, metal artisans and chemical artisans and his nature of work.

Chapter three describes the impact of technology on the artisans. The outline generalize the textile artisan facing competition from British cloth and yarn in the nineteenth Century, and a decline in total industrial employment in India in census period 1881-1931. In a criticism of this view some authors have pointed out that industrial income per head did increase in colonial period, so that the decline in artisanal cannot be read as a sign of economic regress.\footnote{18} The main point is that the Handlooms weavers in north India suffered long-lasting damage from textile machinery introduced in England.

Chapter four describes the demographic trends of artisan and craftsmen. It is totally based on statistical surveys and census report. Chapter five describes the socio-economic changes of artisans. Was there any mobility of the caste system? was there good status in 19\textsuperscript{th} century in north India? These are major outline of this chapter.

Chapter six is a conclusion of overall this work.
REFERENCES


5. I am indebted to Arnold Pacey whose book Technology in World Civilization provided the basic framework of these ideas.


Chapter – II

NATURE OF THE WORK OF THE ARTISANS AND CRAFTSMEN

Before the introduction of machinery every article of domestic use was produced by hand. If a craftsman did his job perfectly, he could easily acquire a patron who normally use to keep him in continuous employment. In a gradually extending world the craftsmen became the keystone of a developing commerce. He organized guilds which absorbed his sons in his trade. There is a strong tradition of continuity by inheritance in the history of craftsmanship, particular techniques passed down in families for generation, and even apprenticeship was a quasipaternal relationship. Thus the craftsman increased gradually in individuality, security scope and importance until the invention of machinery revolutionized industrial production.

With the introduction of machinery there has been a lot of change in the traditional craftsmanship even then a worker who produces an article by handwork is still a craftsman in spite of his labour being facilitated by an electric motor, by machine spun yarns or by standard dyes made in big chemical plants. It cannot be denied that the technique of craft may change with the invention of new tools. Its prevalence may decrease as industry becomes mechanized, the status of the craftsman may change as he becomes part of a larger industrial polity. But despite these apparently inimical developments craft remains an essential method of production in many lines of manufactures, not only because it is for some products artistically
superior to machinery, but also because it is in many cases essential for well made goods.

The study of crafts is an essential key to the understanding of a people’s culture. It cannot be denied that in man’s struggle for existence, artifacts and resources are his greatest assets. In India, the crafts have an importance all their own. They express the great tradition and cultural heritage of our country.

According to dictionary meaning the word craft denotes ‘skill’, ‘art’ etc. In India, however craft is always associated with art and that is why a craft example is usually considered to be a specimen of folk-art or people’s art. Moreover in India craftsmanship traditional characteristic are very much predominant. A craftsman inherits his technical skill generally from his father or grandfather who may have inherited his technical skills from his forefathers.

I. COTTON AND SILK WEAVING

The art of cotton or silk weaving involves different processes. Before we discuss about different processes, it is necessary to give a brief description of the important types of looms generally used in the weaving techniques.

(a) **Throw Shuttle Loom**: This type of loom is fitted to four bamboo or wooden posts fixed in the ground. Of the primary motions, shedding is effected by a set of healds operated by the foot, while the shuttle is thrown across the shed by one hand from one side and caught by the other at the
opposite side of the cloth. The beating up of the weft is done by a reed commonly made of bamboo fitted on to a sley which is given a to and fro motion also by the hand.

(b) Loin loom or Back Strap Loom: In this loom the warp of manageable length and breadth is fastened at one end generally to a wall of a house, while the other is tied to the waist of the weaver with a cotton or leather belt. No reed is used and the shed is affected by half-healed process operated by hand.

(c) Fly-Shuttle Loom: This is an improved type of frame loom which considerably increases the output of the weavers. It has a sley with shuttle boxes at the ends, and the shuttle is pushed from end to end across the sley by pickers attached to a string arrangement pulled with right hand from side to side. The beating up of the weft is done by a reed made by steel fitted on to sley which is given an oscillating motion also by the hand.

(d) Pit-loom: This type of loom is almost similar to that of fly shuttle loom. The only difference being that a square pit is dug in the ground where weavers put their legs. It consists of (i) a wooden sley with bamboo reed (ii) two shafts with cotton string healds, (iii) a warp beam which can be let out with the help of a cord, (iv) a take-up beam on supports and (v) a pair of pedals placed in a pit in the ground where the weaver sits and operates them by his feet.

WEAVING PROCESSES

(i) Wetting: This operation is required only in case of undyed yarn. The hank of the yarn is loosely tied and placed in a reservoir. The water of which
has to be changed every day. The yarn meant for the warp is required to be kept for 3 days and the weft yarn for one day. The yarn is then dried. The object of wetting is to remove from it any foreign matter that it may contain and to make it suitable for the absorption of sizing material.

(ii) **Sizing** : The warp-yarn is then starched for stiffness and glaze. The material used for sizing is flour and til oil. The flour is first boiled with water and is then put in a tub. The requisite amount of oil is also put and substantial quantity of water is added. The hanks of yarn are dipped in this mixture, so that the sizing mixture penetrates the hank. After sizing, the yarn is dried in the sun.

(iii) **Bleaching** : The skeins received from the mills are yellowish and are not sufficiently soft. Degumming is performed by dipping these skeins in cold water, then transferring them to a soap solution kept at boiling point for fifteen minutes. The wet skeins are then removed and thoroughly dried. To secure greater whiteness, the yarn is boiled in a solution of impure carbonate of soda and slaked lime. The skeins are soaked for several hours in cold water before bleaching. Then they are immersed in a large vessels containing boiling acid solution and thoroughly rinsed with the help of sticks removing all dirt and gum. The skeins are immersed in cold water and then dried in the sun.

(iv) **Dyeing** : The method of dyeing of yarn is simple. The colour is prepared in a big vessel by dilution of dye in water and is boiled. The hank is hung through a rod into the boiling solution so that its lower portion
remains in it and by gradual rotation of the rod the entire hank is passed through it. The hank is squeezed and is dried in a place not open to sun.

(v) **Winding**: Winding is the process of transferring yarn from the hanks to bobbins for the warp. The operation is accomplish with the help of a spinning-wheel and a revolving frame. The hank is smeared round the creel and the winder draws a thread from the smeared hank attached to the bobbin. The bobbin is then placed on the spindle which is given revolving motion of the wheel. Thus the yarn is passed from the hanks to the bobbins.

(vi) **Warping**: Generally there are two types of warping practiced in colonial India – the street warping and the drum-warping, the latter being the advanced technique. The requirements for street warping are four thick strong post, some uniformly thick sticks of about three feet length and some rope. Two posts are fixed crossing each other. At the top end of these horizontally tied a stick and to this stick is attached a piece of rope which is tied to a nail fixed on the ground. The other two posts are similarly placed at some distance.

One end of the warp thread is tied to the horizontal bar placed over the crossed posts and the warper then moves towards the other pair of crossed posts with the creel in his right hand and the leasing frame in the left. At suitable intervals between these posts are placed some pairs of lease rods to enable the warp threads being maintained in their respective positions. As the warper reaches the lease rods, he raises the lease-frame held in his left hand which results in a division of the warp thread, putting an equal number of threads up and down. The process is continued till the
required number of threads, enough for the width of the cloth to be woven, is secured.

So far drum-warping is concerned that it is an improvement over street-warping and is so called since warping is done with the help of a drum which is worked by hand. A sufficient number of warp bobbins are attached in rows to the vertical stand with the help of the attachment provided on the stand. From these warp bobbins on the stand, threads are drawn forward to the warp-drum and tied to the hooks. After threads are tied to the hooks the warp-drum is given a clockwise rotary motion by the warper and the drum is rotated till the required length of the warp is obtained.

(vii) Denting: Denting is the process of drawing warp-ends through the dents of the reed. In this two persons are required: one for picking up the threads in tows in succession and the other for drawing them through the reed with the help of the hook. The process is repeated till the warp ends pass through the reed.

(viii) Beaming: It consist in winding of warp threads on warper’s beam. The warp is stretched to full length, and the ends of the threads nearer to reed are tied to the beam and the beam is then wound. The other end of the warp is held tight by tying it to a sufficiently heavy piece of stone or wood or it is tied to some pillar.

(ix) Weaving: Before starting weaving, the weaver has to ensure if the parts and accessories of the loom are in proper order and placed in their appropriate position.
The art of weaving is usually governed by three primary motions, viz. the shedding motion, the picking motion and the beating motion. The shedding motion consists in depressing the treadle by one foot which results in making an opening in the warp threads. The picking motion consists in propelling the shuttle by giving an oblong pull to the handle. The beating motion consists in beating up the weft thread by drawing the sley forward.

The weaver gives motion to the loom through the treadles by his feet. By working the treadles the weaver raises or lowers the threads of the warp. The heddles, the treadles, and the threads of the warp are all inter-connected and each alternative motion of the foot for raising or depressing the warp threads forms a shed.

**MUSLIN OR JAMDANI WEAVING**

In manufacturing figured muslin six two weavers sit at the loom. They place the pattern, drawn upon papers, below the warp, and range along the tract of the woof a number of cut threads equal to the flowers of parts of the designs intended to be made; and then with two small pointed bamboo sticks they draw each of these threads between as many threads of the warp as may be equal to the width of the figure which is to be formed. When all the threads have been brought between the warp, they are drawn close by the stroke of the sley. The shuttle is then passed by one of the weavers through the thread, and the weft having been driven home it is returned by the other weavers. The weavers resume their work, with their pointed bamboo sticks, shuttle in the manner above described, observing each time to pass the
flower threads between a great or less number of the threads of the warp in proportion to the size of the design to be formed.

**CARPET WEAVING**

As far as carpet weaving is concerned that it is still followed in the primitive way.\(^7\) There are two types of loom used in carpet weaving – horizontal and vertical loom. In some jails the vertical loom (which occupied little space) has been introduced.\(^8\) Sir George Birdwood’s\(^9\) opinion that the *darris* and *Satranjis* are of the Hindu origin and wollen *kallins* of Muhammadan. He pointed out the fact that in 1901 out of 413 wollen carpet weavers 328 were returned in the census reports as being Muhammadan and only 85 as being Hindus, while among 1415 cotton carpet and rug makers, 728 are returned as being Hindus, 685 as Muhammadans. The cotton carpet sellers are however more Muhammadans than Hindus. The major centres of the carpet weaving in 19\(^{th}\) century were Delhi, Agra, and Mirzapur, and the present carpet weavers of Gaya trace connection with the district of Mirzapur and to Nizamabad in the district of Azamgarh. In addition to this Darris and Satranjis are made in Patna, Gaya, Bhabua, Champaran and Bihar and in Rangpur in Eastern Bengal.

**BROCADE WEAVING**

The tradition of brocade manufacture was prevalent in many other centres in India such as Ahmadabad and Surat in the West, Paithan, Aurangabad and Raichur to the western Indian modes, Murshidabad in the East, Delhi and Lucknow in the north and Tanjore, Tiruchirapalli and Madras in the south. Nevertheless, Banaras brocades stand out as overwhelmingly
towering both in style and execution. As a class by itself the Banaras brocades, therefore deserve a separate treatment.

In the early 19th century, for the first time we come a detailed description of Banaras brocades in the travel accounts of Lord valentia, who visited India in the first quarter of the nineteenth century and held a Darbar at Banaras. According to his information prosperity of the people of Banaras came on its brocades and zari manufactures as well as trade and these textiles were popular export items to Europe. Bishop Heber visiting the holy city in the early 19th century observed that it was a great centre of trade and manufacture of expensive textiles. Colin Mackenzie was more specific, she mentions the brocade costumes worn by the grandees of Banaras. About her visit to a brocade shop of Banaras she notes “Bales of most magnificent gold and silver, stuffs called ‘kinkob’ unfolded before us. I do not suppose any European brocades equal them”. The official catalogue of the craft exhibition held at Delhi in 1902-03 on Indian Art by George Watt throw much light on this fabric. He noted that Banaras was the chief centre of brocades.

The brocade art of Banaras which has been famous since antiquity into the hands of the Muslim weavers. It is generally believed that craftsmen of the famous textiles became the noted Banaras weavers, either they were converted to Islam in the Mughal times or from motives of self-interest. During the medieval period the best artisans were frequently serving in the Victor’s court.
Some trace the origin of the brocade weavers of Banaras to immigration in the time of Mahmud of Gazni. It is said that they introduced the use of gold thread and before that the Hindus only wore plain cloth.\textsuperscript{17} It is true that the Muslim rule was firmly established in India there might have been importation of artisans from the great cities of Persia and Central Asia.\textsuperscript{18} We can not ignore the existence of Hindu brocade weavers prior to the advent of the Muslims in India.

The chief raw material for Banaras brocades was silk largely imported from various production centres like Bengal, Kashmir, Central Asia, China and even from Italy.

The next essential material was Kalabattu, the gold and silver threads commonly known as zari.\textsuperscript{19} It was a specially prepared thread of silk with metallic mounting of gold, silver or gilded material. Surat was a major zari producing centre and supplier of zari material for Banaras \textit{kimkhab}.\textsuperscript{20}

So far weaving process is concerned that the tools were not generally very different from weaving of other fabrics, but the Banaras \textit{kimkhab} differs in a device where the pattern emerge in the weft line if projecting from the surface.\textsuperscript{21}

The model design or \textit{naksha} which was a kind of inverted heddle was suspended above the warp, the other ends of the cords tied to a horizontal bar running below the warp. The strings of the \textit{nakshā} had loops where they crossed the warp through certain warp threads were passed. But instead of getting and up and down motion from treadles pressed by the weavers foot in rhythm, the threads of the \textit{nakshā} were worked by another person, usually
a child seated on a bench above the level of weavers head. He had to hold a bar of wood and giving it a twist. It was his duty to draw up the cords attached to the threads of the warp according to the requirements of the pattern. Sitting at the head of his loom the weaver created a variety of designs by introducing silk of varied colours into the woof with kalabattu or gold or silver thread as his young apprentice watched out for the pattern from above it emerged on the surface.\textsuperscript{22}

The process of weaving was intricate slow, time consuming and demanded great deal of skill in workmanship. The principal brocading formed the most important feature of the art and woven on the loom with the help of an additional pencil shuttle carried in and out of the warp threads according to the needs of the pattern.\textsuperscript{23} The woven fabric taken out of loom was starched pressed and polished for glaze. Polishing was the final stage of the process.\textsuperscript{24}

In the 19\textsuperscript{th} century Banaras brocade artist were in search of something more than buds and flowers and the \textit{shikargah} or hunting scene with animals and birds entered the field.\textsuperscript{25} This pattern was popular among the shawl weavers of Kashmir and \textit{needle} crafts of Rajasthan.\textsuperscript{26} In Banaras brocade probably appears for the first time in grandeur in the mid-nineteenth century.\textsuperscript{27}

George Watt noted that in the 19\textsuperscript{th} century Surat-Ahmadabad group of brocades started copying English wall paper designs.\textsuperscript{28} Although Banaras retained its classicality, a change was soon possible at the turn of the 20\textsuperscript{th} century. In order to assimilate European design the patterns were altered.
The Banaras brocade witnessed a major change after the visit of a weaver to London where he collected wall paper designs and European pattern books. Wall paper designs of the Victorian age introduced in Banaras in the early 20th century. The brocades exported to Europe were basically geometrical in pattern. Besides them many new patterns like, button, roses, flower basket, bonquets and pets entered the arena. Initially they were highly appreciated by the sophisticated and westernized Indians but induction of ruin and aniline dyes and European patterns affected the brocade art. This may be looked upon as the declining phase of kimkhab art.

Kashmir Shawl-Weaving

The technique of Kashmir shawl-weaving is very interesting. When the warp is fixed in the loom, the pattern drawer and the person who determines the proportion of yarn of different colours to be employed are consulted. The workman prepare the needless by arming each with coloured yarn. The needles without eyes are made of light and smooth wood and have both their sharp ends slightly charred to prevent their becoming rough or jagged through use. Under the superintendence of the person who determines the proportion of yarn of different colours, the weavers knot the yarn of the needles to the warp. The face or right side of the cloth is placed next to the ground, the work being carried on at the back or reverse on which hang the needles in a row. As soon as the master is satisfied that the work of one line of woof is compelled, the comb is brought down upon it with a vigour and repetition apparently disproportionate to the delicacy of the materials. The cloth of the shawls is generally of two kinds. One plain or
of two threads; the other twilled or of four threads. Two persons are employed in weaving. One throws the shuttle from the edge as far as he can across the warp; it is then seized by the second weaver who throws it on the opposite edge and then returns it. When the shawls are completed they are submitted to the cleaner. Then the shawls are washed in clear cold water. Soap being used with great caution on white parts only and never on the embroidery. Coloured shawls are dried in the shade, while the white are bleached in the open air.

So far weavers were concerned that the weavers are all males, commencing to learn the art at the age of ten years. In all transactions there were two parties (i) the master or ustad and (ii) scholar or Shahgird. The former being the capitalist and the latter the mechanic. Work was executed under four different conditions. First, for wages, when it almost always happens that a system of advances has occurred by which the workman was so deeply indebted to his employer that he may in some sort be considered as his bondslave. Secondly, upon contract, of which the common term is that one piece was paid for every hundred needless carrying coloured yarn that have been each once passed round as many yarns of the warp. Third, a sort of partnership in which the ustad finds all the materials and the workman give their labour. When a shawl is sold the outlay of the ustad is deducted from the price and the remainder is divided into five shares of which one goes to the master and other four to the workman. The fourth mode was an equal division of the proceeds, in which case the master not only finds the materials but feeds the workmen.
Embroidery

The craftsmen of North India have always excelled in hand embroidery on cotton, silk, wool, velvet and their creations have been a source of admiration. The *kasida* embroidery of Kashmir, the darning stitch *phulkari* work of the Panjab, the art of embroidering with gold and silver threads of Banaras and the *chikankari* of Uttar Pradesh are still famous and desired throughout the world.36

The *kasida* embroidery of Kashmir is done either on silk or wool, with gay colours and varied designs. The chief stitches employed are the stem, the chain and the satin stitch. The main centres of *Kasida* in Kashmir are Shrinagar, Badgaon and Naushahra. The Kashmir embroider takes great pride in embroidering shawls which have a pattern identical on both sides. The motifs used for embroidery to shawls follow Indian tradition such as the elephant, the mango, the lotus.

*Phulkari*37 means ‘flowering work’. The home of *phulkari* is Panjab and the origin associated with the jats. The base of embroidery is like coarse *khaddar*. The embroidery is done in a darning stitch from the back, each stitch being about quarter of an inch in length. The best Phulkari were produced in the district of Peshawar, Lahore, Sialkot, Patiala, Amritsar, Ludhiana and Ambala.

In the North-western provinces38 large quantities of velvet caps embroidered with silk were made at Lucknow, Banaras and Agra. Lucknow is however celebrated for its gold and silver embroidery. These are known under the names of *kamdani* or *muslins* hand embroidered in gold wire and
zardozi or velvet cloth embroidered with gold and silver thread. Lucknow exports its embroidered fabric to all parts of India. Saris, Dopattas, coats, mantel-fringes, saddle-covers, bags, hangings, caps and shoes are articles generally prepared. Gold and silver embroidered banners are made both at Lucknow and Banaras.

II. Metallurgy and Metal works:

Metal craftsmen played an important role in north India. A remarkable fact relating to iron-smelting in the Indian sub-continent is the wide-spread availability of various kinds of iron ores in almost all the regions outside the alluvial plains of the Ganges, the Indus and the Brahmaputra rivers. Another point to be emphasized is the readiness of the ancient and pre-colonial smelters to utilize the poorest ores of iron, after winnowing and washing into workable quantities. Having thus taken care of the problem of the supply of ores, the artisans devised ways of roasting and smelting them. The cleaned ores were first heated in open pits to remove the more volatile impurities and then heated until it became semi-molten to obtain a rough bloom. This bloom was then heated and beaten to remove the more difficult impurities such as carbon. This latter process entailed a certain degree of skill because the iron-smith could either beat and heat the iron till it became wrought iron (with less than 0.06% of carbon) which was the most malleable and therefore easy to use form of iron.

The artisan could also stop at a stage midway between pig iron and wrought iron i.e. when there was higher percentage of carbon present in the iron (i.e. 0.1-0.9%) so as to give it the appellation steeled iron. This was
tougher and more resistant to corrosion. Thus the Indian artisan moved from
the impure bloom.

Indian metallurgists have to their credit the empirical discovery of a
specific method of manufacturing highest quality steel (wootz). This method
was much more effective than medieval European one. According to which
steel was obtained by heating an iron bloom in an open forge
(carbonization). The steel layer was obtained on the bloom’s surface then
the bloom was broken into pieces, each piece heated a new and so on. This
process was time and labour-consuming indeed. In India to make steel they
used crudest blooms of most impure iron. A British observer noted in the
30s of the nineteenth century an European would never believe “that of such
unpromising material such excellent steel is made”. A bloom was broken
into pieces from half a pound to 2 pounds each and placed into a crucible
made of red loam mixed with rice husk, hermetically covered with clay and
placed for into an ordinary furnace urged by two bellows. After two and a
half hours the crucible was removed, cooled and broken to get a piece of the
highest quality, pure carbonized steel. This technology attracted the
attention of the great British Naturalist Robert Hook (1635-1703). Another
scholar, Hellenus Scott, who in the eighteenth century explored the
techniques of some Indian crafts, noted that this crucible made steel was
used for such as weapons, borers, files.

True wootz however was a freak of technological development. The
Indian furnaces continued to function at temperatures lower than that needed
for liquifying iron (1535°C) as a result of which cost iron failed to appear
even 2000 years after its debut in China.\(^4^4\) In China the early appearance of cast-iron was due to the presence of phosphorus (1.4%) in the Chinese ore which reduced the melting point of iron to 950°C. In addition, their furnaces were made of good refractory (heat resistant) clay and were fuelled by surface coal (from C. 400 A.D.). However the most vital factor was the availability of efficient double acting bellows from 4\(^{th}\) century B.C. and the hydraulic bellows from the 1\(^{st}\) century A.D.\(^4^5\) which allowed the iron smiths of China to maintain the strong blast of air so essential for producing cast iron. In India the absence of the above factors, was perfecting forging techniques because they were mostly dealing with wrought iron (this perfection in forging techniques is almost missing in early Chinese metallurgy because one could directly cast the most intricate shapes once the iron liquified). Consequently, the Indian furnaces remained small and inefficient due to the non-refractory nature of the clay.

The primitive nature of the bellows, as well as the continued reliance on wood charcoal left Indian vulnerable to the destructive designs of British imperialism. These furnaces merely managed temperatures ranging between 1100°-1200°C which were sufficient only to reduce the ore into a semi fused workable bloom.\(^4^6\) The closest we come to a blast furnace is that described by Banerjee from the Kangara region which he dates to the 19\(^{th}\) century. This furnace consisting of a slender upright cylindrical shaft or oval cross-section made of clay resting on a high mud platform. The inlet tubes were introduced at the bottom and through them the flow of air was maintained. The bellows remained simple goarskin bags. The bottom of the furnace had
a perforated stone slab through which the slag passed out and was collected in a pit specially excavated for the purpose. No flux as used for smelting the ores. The bloom was beaten with a wooden hammer on a granite anvil.\textsuperscript{47} However, some form of the blast furnace must definitely have existed in Orissa in 1708 since Hamilton clearly mentions the casting of iron anchors in moulds.\textsuperscript{48}

I shall refer to a few misconceptions about cast iron cannons in India. The arrival of European and Turkish gun casters in India at the advent of the 16\textsuperscript{th} century does not imply the introduction of cast iron cannons nor the technology for their production. The foreigners were casting\textsuperscript{49} brass and bronze guns from the metal which is much easier to melt. In Britain on the other hand, the demand for cast-iron cannon had led to the sudden increase in the size and output of the blast furnace from 30 to 300 tons within the course of the 15\textsuperscript{th} century.

As far as iron cannon is concerned, we have a very clear cut description in the \textit{Ain-i-Akbari}. The barrel was made up of discs of wrought iron through which holes had been punched using hammers and chisels. These perforated discs were joined together by forge welding and the joints were reinforced by slipping redhot iron rings into these joints so that on cooling, these rings contracted tightly onto joints.\textsuperscript{50}

In the light of these varying levels of technology, the question of diffusion becomes quite pertinent. The fact that the wages of the ‘foreign experts’ were coming down by the last quarter of the 17\textsuperscript{th} century indicates the absorption of technology by the indigenous craftsmen.\textsuperscript{51} However one
finds evidences such as the one by Thevenot (1666) which shows that the diffusion of technology deliberately being withheld or was forced into a slow pace by socio-economic constraints since it took almost two centuries for the technology of the bronze cannon to diffuse to the various parts of India. One must also keep in mind the fact that two sectors of armament technology existed simultaneously in India. One being the state financed technology practiced in the Royal Karkhanas for the production of ornamental guns, sword, cannon and the other was the technology of the countryside which catered to the needs of the rural aristocracy e.g. the Ironsmith of Birbhum and Andhra.

As far as non-ferrous metallurgy is concerned that it was widely spread. Some interesting data on it may be obtained from the Dhatutpati, a treatise by Thakkura Pheru, who at the end of the thirteenth and beginning of the fourteenth centuries was incharge of the Delhi mint. Apart from the above mentioned work, a number of other treatises on mathematics, jewel-testing and numismatics. The Dhatutpati seems to be a guide book for mint masters, significantly written in Sanskrit and ‘Hindavi’. His work is a practical handbook on crucible smelting of copper, bronze, lead, brass, tin and several kinds of alloys.\(^{52}\)

In the nineteenth century Buchanan’s accounts suggest that a wide range of products were made in brass, copper, bell metals, tin and other metals in Gangetic Bihar. We may also note the celebrated bidri alloy of copper, lead and zinc. The manufacture of bidri ornaments, sword and dagger hilts and scabbards, smoking utensils and inkstand emerged in the
17th century Bidar and later on spread in Lucknow, Purnea, Hyderabad and Murshidabad. Usually four men were engaged in the bidri manufacturing process. One made the alloy and cast the item, another formed it, the third made the inlay, the fourth blackened and polished.\textsuperscript{53}

A great variety of metal items was manufactured by urban craftsmen. According to vidyapati Thakur, the ringing of smith’s and tinners’ hammers was specially noticeable.\textsuperscript{54} In the list of the city metal workers producton our sources mention all kind of household utensils like for example saucepans, dishes, frying pans, spoons, scissors, chains, locks of special significance here was the manufacturing of various kinds of iron tools and implements to be sold to craftsmen of different occupations. For an iron smith things like spindles, shuttles, needles, chisels, files, hammers, mallets, saws, drills, knives, scissors and iron presses were an important part of production.\textsuperscript{55} These must have been a market for these goods for contrary to what Irfan Habib suggests\textsuperscript{56} iron tools were widely used an urban carpenter for instance, operated 14 kinds of metal tools, same can be said of other craftsmen.

Brass and Bronze ornaments appear to have been worn by women of all classes in Bihar around 1904.\textsuperscript{57} T.N. Mukherjee in his monograph in Bengal mention that ‘The manufacture of copper, brass and bronze utensils is perhaps the only industry which has not suffered from foreign competition or machine made articles’. Also porcelain and enamelled iron-ware had apparently not made much of an impact by 1904.\textsuperscript{58}
III. CHEMICAL INDUSTRIES

In Gangetic Bihar particularly in Bhagalpur district, bracelets (churi) of a coarse kind of glass called kangch are a good deal used. Francis Buchanan's account of Mysore shows the process in use. There are several kinds of kangch. The cheapest and most easily made is black and perfectly opaque. The workmen take 4 sers (8 664/1000 lb.) of impure carbonate of soda (sajjimatti) and powder it. They then place it in the crucible of the furnace and heat it for twelve hours stirring it occasionally, until it melts. They then take it out with an iron ladle and throw it into cold water. They then powder it again and afterwards put it into the crucible. It melts in three or four hours but is kept in this state all the day, and is frequently stirred with the ladle. In the evening it is taken out in ladlefuls, poured on the grounds and allowed to form cakes called Thaka. Next day the cakes are put again into the crucible and melted are formed into rings. The impure soda gives ½ of its weight of glass.

The furnace is made of unbaked clay over a hemispherical hole, that serves for a fire place. The upper part of the furnace also is hemispherical and within does not exceeds a cubit in diameter. The crucible fills the whole space from side to side so that the flame does not reach the materials which it contains and only envelopes its bottom and sides. Four little walls on the outside, about four inches thick and six inches deep strengthen the outer part of the furnace dividing it into four spaces. At the bottom of one is a hole, through which the fuel is thrown into the fire place and the smoke comes out by another hole which is formed at the bottom of the opposite space. Above
this there is a large hole by which the materials are introduced into the crucible but this is afterwards shut by a plug of fresh kneaded clay, which can be removed to stir the materials or to take out the melted mass. At the two other sides, opposite to each other are two apertures through which the melted glass is taken with a rod to take the rings, a workman sitting at each. These always remain open.

Another kind of glass is greenish and a little diaphanous. To make this the workmen take about 7 sers of the impure soda and make it into a paste with little water, forming it into cakes of about ¼ ser weight. These are put into the crucible and is about 24 minutes become red. The fire is kept up until night, but is then allowed to go out. In the morning the cakes are taken out and powdered. The powder is then put into crucible before noon melts and is taken out and thrown into water. The slag is then powdered and dried. Next day the powder is again put into the crucible and melts before noon. It is stirred all day, and in the evening is taken out and poured on the ground to form cakes. If the last melting is continued long, the green colour is pale and is called white. If continued for a shorter time it is deeper and is called green.

There is another green glass of a bright grass colour (zumorrodi) and more diaphanous. The process goes on as in the former case, until the materials have been thrown into water and powdered. This powder is added 1/16 of a black carburet or perhaps merely a peroxide of copper prepared as follows: take a quantity of copper and make it into very thin plates; take a piece of moistened cotton cloth, cover it with turmeric made into a paste
with water and then sprinkle the surface with salt. Place on this the copper, cover this with salt, that with a paste of turmeric and that with cloth then heat them on the outside of the furnace for four or five days. During this vegetable matters are reduced to charcoal and have penetrated the copper which is then powdered and is quite black.

Another glass of a bright deep blue (Asmani) is made in the same manner, only the matter added is a metallic slag called *Rung* which comes from the west of India and sells at 2⅛ rs. a *ser*. It probably contains cobalt but previous to bring put, with the other materials is powdered with a little muriate of soda and becomes black. The powder when heated, emits copious fumes but has neither the smell of arsenic nor sulphur. 3 *sers* of the powdered glass require 3 *chhataks* of the *Rung*, powdered with little salt.

**Tools and Implements**

Tools for working molten glass for bangles and bowls used in north India at the colonial time by workers in as follows.

*Ankri, adhkar, unkri or upri* – This is an iron rod about two feet long, hooked at one end and fixed on to a wooden handle at the other. It is used for stirring the molten glass and taking it out of the crucibles.

*Aarag, sallakh or suja* – This is a long pointed spit of iron of uniform thickness.

*Mala, bala, thapi or pathia* – This is a moulding and pressing tools of iron, shaped in some districts like a big spoon which is used for taking out metal while in some other districts it is shaped as a heavy blunt dagger.
Tokla – It is an iron rod with a thick but tapering off to a point.

Bardhana, barauna, bidarka or unar – This is a short piece of stout iron wire fixed into a light bamboo handle at one end and sometimes hooked, sometimes straight, at the other end.

Chitarana – This is an iron rod used in saharanpur and Etah for twisting the molten glass for certain kind of bangles.

Kalchul or Karchuli – This is an iron ladle used for transferring the molten glass from one crucible to another.

Despite the fact that glass making craft was known to the ancient Indians, glassmakers as a distinct professional group and caste are mentioned by much later sources.\(^\text{64}\) We may therefore suggest that the emergence of glassmakers as a professional group was a slow process due to the limited demand for glass items.

Nevertheless glass making experienced more foreign influence than any other craft referred to in this part. This was especially relevant for the manufacture of looking glasses, spectacles, cut glass mirrors and telescopes. In the eighteenth nineteenth centuries these things gradually penetrated into the households of the nobles, the city rich and then more wider strata of city dwellers. One of the first known reference to the upalocanagolaka, which P.K. Gode\(^\text{65}\) understood as spectacles. In eighteenth century dictionary things like spectacles and spy glasses are referred to by well-established terms for example, Bahar-i-Ajam explains one of these terms, i.e., spyglass, through another one, better known to readers: "spyglass (durbin) is
something like spectacles (ainak) to see the things situated far away. It helps ship captains to watch the sea and (the military) to reconnoiter the enemy’s camp”.

Thus in early modern times the Indian glass making adopted a number of technological innovation from Europe. But due to the fact that in India glass items, with the exception of bangles, were not among the goods of mass demand. The progress in this sphere of industry had no serious impact upon economic and technological development as a whole.

In nineteenth century paper making was one of the most popular fields of urban craftsmen. It was especially well developed in Zafarabad, Agra, Awadh, Murshidabad, Arwal, Hugli. Zafarabad, a small town near Jaunpur even got the nickname of Kaghzishahar or paper town. In many Indian cities the kaghzi mohallas or quarters where paper makers (kaghzi) lived, still exist.

Raw materials for paper consisted on flax and hemp, both reduced to a state of pulp. The pulp was soaked for a certain time, washed pounded by feet worked wooden pestles. Then the stuff was washed, dried and soaked several times more in a mixture of water, sajji (soda subcarbonate) and slashed lime, cleaned by passing it through running water, sorted in a vat and spred upon bamboo frames. The frames were gently moved to and fro, the water was allowed to escape, and the mass was equally spread upon the frame. After that the frame was turned down, wet sheets pressed, dried and polished by oiled cloth and agate. A skilled polisher was able to polish upto 100-120 sheets a day. The manufacturing process required 6-10 workmen
and raw material was usually purchased from the market. The organization of labour was different. It might be a big family with several grown up men, a cooperation of partners or in other cases, well to do kaghzis, who had several pestles and vats, hired workmen.\textsuperscript{69}

Gunpowder manufacturing became an important field of urban industries in the first half of the nineteenth century.\textsuperscript{70} It was used for fireworks, which for many centuries remain a significant part of the Indian festivals. Gunpowder and firearms represent a technology which from its inception and in practically all its forms is difficult to restrict to particular regions and cultures for purposes of study.\textsuperscript{71} The impact of gunpowder on state and society has also had worldwide ramifications. In pre-modern times this technology manifested a tendency to spread across the continents at a pace. Recipes for producing gunpowder detonations and pyrotechnic devices of military significance based on gunpowder, developed in China in the first half of the 13\textsuperscript{th} century, and seem to have reached the Islamic world and then India and Europe before the end of the same century.\textsuperscript{72} Skill in the manufacture and use of firearms proper-cannon and handgun developed in Europe during the fourteenth century and then spread to the different parts of world with equal swiftness.\textsuperscript{73} This second wave of the spread of gunpowder technology had far-reaching socio-political consequences on a global scale.\textsuperscript{74}

The nature of a mixture of sulphur, saltpetre and charcoal appears to have been first discovered in China. The earliest description of the making of an explosive powder resembling gunpowder in its composition and
properties, is given in a Chinese military handbook issued in 1044.\textsuperscript{75} By 1230, according to Needham, the position of nitrate in the gunpowder used in China was raised to the point of making explosions and detonations possible.\textsuperscript{76} In the Europe on the other hand, the earliest mention of gunpowder recipes occurs in the works of two late 13\textsuperscript{th} century, experts of fireworks namely Mark ‘the Greek’ and Roger Bacon.

In India the making of gunpowder out of Saltpetre (5 parts), sulphur (1 part), charcoal (1 part) ground together with the juices of herbs and garlic, dried and powdered. Gunpowder manufacture was almost exclusively urban. It was carried on in fortress arsenals and royal karkhanas, raw materials were supplied from the countryside. The quality of gunpowder was high enough.

The dyers in most parts of Gangetic Bihar\textsuperscript{77} are chiefly employed to dye the clothes of those who attend marriage parties that are exceedingly numerous, and during the three months which the ceremonies last, the dyers make very high wages. But at other times they have little employment. They dye chiefly with the safflower which they give two colours, kusami a bright pomegranate red, and golabi a pale but fine red like the rose. Each colour is of two different shades. They also dye with Indigo, but blue is not in much demand.

As far as distillers are concerned that it was in proportion to the population more wealthy and numerous than in any of the district hitherto surveyed.\textsuperscript{78} They distil entirely from the Mahua flowers. The dry flowers, with from equal to double quantities of water are put in round earthen pots
with rather narrow mouths and exposed to the weather to ferment. This process is finished in from four to eight days, according to the heat of the weather. The whole fermented mass, flowers and water is put into a still and the spirit is drawn slowly off. It is never rectify and after distillation is always very much diluted with water, owing to which it will not keep above 15 days and it is best when fresh from the still. The dilution is usually a quantity of water equal to that of the spirit. The water is sometimes put into the recipient before the distillation commences and other is added when the operation has finished. The still is a large earthen pot, inclining a little to one side over a fire place confined by two walls of clay. The head of the still is a small earthen pot inverted on the mouth of the larger and luted with clay. Three tubes more or less of hollow bamboo pass from the head to an equal number of narrow mouthed unglazed earthen pots that serve as recipients. These were major techniques of distil liquor making in nineteenth century in Bihar. Till today this process is prevalent in this region.

So far tanners are concerned that as usual there are two kinds. Those who make shoes, ropes, drum-heads and saddles and cover baskets in the western parts are called *chamar* and in the Eastern *Muchi*. Buchanan in his Bhagalpur account mention that –

Some at Munger make very neat shoes, after the European fashion and partly there partly at Bhagalpur are about a dozen houses, the people of which make neater shoes of the native fashion than are made in any of the districts hitherto surveyed. Those in the villages forming the great mass live chiefly by making shoes and ropes for the farmers and form a regular part of the village establishment. They are paid chiefly in
grain and each family may make 3 rs. a month. The good workmen in towns make 5 or 6 rs. a month. 

As far as tanning is concerned that in the early nineteenth century was almost wholly a rural industry. Although large tanner colonies were known to have been settled on land grants in or near some north Indian cities at least as late as the eighteenth century, these were exceptional. By and large, tanning was rural because it needed to be so. Consumption of beef being restricted, so was the slaughtering of cattle for consumption. The government owned urban slaughtering house was a later institution, so the raw hide came exclusively from fallen that is naturally dead, cattle or murdari as opposed to halali in north Indian trade parlance. Such cattle were, of course all rural. The green hide or the hide in its raw state if not cured within a few hours of death becomes irretrievable as leather. The risk is so great that even in the age of the railways, the green hide was never transported. This necessitated the tanner, who was usually the curer to stay in close proximity to the cattle population. The tanning substances grew in the wild, were collected by the craftsmen and were rarely traded. The bark of the ubiquitous babul (Acacia arabica), the nuts of myrobalan (Terminalia chebula) and the south’s avaram bark (Cassia auriculata) were best known tannin whereas curing was usually done with saline earth. The raw material frequently drew tanning into the neighbourhood of forest in which turn led to the somewhat more delicate industry in skins of wild animals. Thus the northern borders of Rajputana and the foothills of the Kumaon and Garhwal Himalayas became famous for sambar skins. Gorakhpur town had a
reputation for embroidery of skins of black-bucks from the Nepal forests. Nilgai skin was used for charpai covers in the north.\textsuperscript{83}

In the leather chain, the manufacture of finished goods, that was considerably more commercialized and dispersed. The leather craftsmen, the Mochi was also socially better off probably because he did not have to touch flesh. The indigenous shoes appearing universally as one made of redish leather with a curled front, thin sole and covering the feet to a little above the toes. This ubiquitous article was nowhere a mass consumable but was worn by the relatively wealthy and the city dweller.\textsuperscript{84} This curled shoe was made in craft towns, came into contact with forms of local embroidery with artisans engaged in gold-thread manufacture and was transformed into a richly design object. Lucknow had developed this craft of gilded and embroidered shoes to excellence, other example of a fusion between footwear and jari come from Jaipur and Delhi.\textsuperscript{85}

The tanning process were simple if back-breaking. The simplicity explains the ease which tanning could be combined with other labour. Flaying was usually done with a short and sharp knife called rampi.\textsuperscript{86} The next process was curing the raw hide of bacteria that could destroy it. Curing was done by either sun drying or salting the hide. In the first case the hide was merely left in the sun flesh side up for several weeks till it was completely drained of moisture and bacteria. A better method was air drying where the hide was stretched on a frame and kept under shade. But the method most preferred by tanners was salt-cure where salt solutions were
repeatedly painted on the flesh side of the hide. The process became known as pickling in salt.

Tanning began with a preliminary soaking, first in water to de-salt the skin, then in lime solutions to remove hair and finally in tannin solutions under close and extremely long contact with the bark of the required tree. The skin was placed between barks and soaked in bark solutions. This process could either happen in a pit or the skin was sewn up in a bag containing the solution that was repeatedly changed. Finally, the leather was finished but in villages the process could in fact much simpler: the skin was merely wrapped in bark and soaked in water and almost never finished. On average tanning process took about thirty to fifty days to complete. By the end of the nineteenth century, chrome-tanning had been invented in the US, cutting down the time to as little as a day. In India, Alfred Chatterton, Director of Industries in the Madras Govt. introduced it in demonstrations but it was not until the First World War that chrome tanning became popular then it was practiced only in factories in a few towns.

Thus we can say that the source material analysed in this chapter allows to presume that the widespread estimation of crafts technology in nineteenth century in north India as backward and stagnant, especially as compared to European one. It may be interesting to note that in the European travel records of the eighteenth-nineteenth centuries description of Indian craft techniques or tools are conspicuous by their absence, with the exception of those crafts which were new and exotic for the west. First regular descriptions of Indian craft techniques are to be found in the works
by the eighteenth and nineteenth centuries observers like Buchanan, Forbes, Heyne and others. It is to them that we owe the idea of India’s universal backwardness in technology.
NOTES AND REFERENCES


31. E.B. Havell, *op.cit.*, p. 84.


58. Ibid., p. 301.


61. Ibid., p. 250.

62. Ibid., p. 251.


72. J.R. Partington, *A History of Greek Fire and Gunpowder*, Cambridge, 1960, pp. 201-2, 204, who maintains that many of Najm-al-Din Hasan al-Rammah’s (d. 1294-5) recipes are like those in Marcus Gracus’. He also quotes a remark of Reinaud’s (Journal Asiatique 1848, p. 193) that these recipes might have reached the Islamic world through the Mongols. For a detailed argument that Gunpowder come to North India with the Mongols during the 13th century. See Iqtidar A. Khan, ‘The Role of Mongols in the introduction of Gunpowder and Firearms in South Asia’ in Gunpowder: The History of an International Technology, ed. Brendra J. Buchanan, pp. 34-8.

73. Depiction of the earliest cannon ‘a vase shaped vessel armed with an oversized arrow that projects from its mouth’ appeared in illustrations prepared in Europe and China in 1326 and 1332 respectively. In Joseph Needham’s view (The Guns of Khaifeng-fu Times Literary Supplement, 11 Jan. 1980, p. 11), these illustrations suggest that the early artillery originated in China.


Lucknow appears in nineteenth-century sources as a town which had inherited a diversified leather and hide production and trade, but which did not participate in the great expansion of the tanning trade from the 1870s onwards. Until the rise of Kanpur, Lucknow might have been north India’s most important ‘hide emporium’. William Hoey, *A Monograph on Trade and Manufactures in Northern India*, Lucknow, 1880, p. 27.


Chapter – III

IMPACT OF TECHNOLOGY ON THE ARTISANS AND CRAFTSMEN

By the eighteenth century the growing demands of Indian handicrafts by European Companies had added much to the complexity of the Indian clothing business and further separated the makers of quality cloth both from their raw materials (cotton, silk, mixtures of silk and cotton or wool) and from the market for their product. The European traders were particularly concerned to promote productivity, standardization and variation of product and sought to extend their hold not only in the small urban karkhanas, or workshops but indeed into rural units.¹

Alongside the centres of fine textile production meant for the nobility or for sale in the distant markets, there existed all along more humble units of production, turning out coarse or medium quality cloth for use locally or by consumers in nearby towns and villages. At lower levels, it has been suggested cloth production (from the cultivation of cotton to the stage of weaving) was sometimes carried out within the family unit of specific caste groups such as the jogis and julahas of Bengal. But there is some evidence of the intervention of middlemen even in these humbler spheres.²

Taking as his touchstone the degree of division of labour and specialization and the extent of capitalist participation in and control over marketing and production. Sabyasachi Bhattacharya has distinguished three different levels of organization in the industry. The first was typical of rural handicrafts production which was dispersed, artisans worked at home aided
by family members and marketing was often unmediated by any trader. Here spinning and weaving might be combined in the weavers household or the weavers might use thread already spun in the cultivators household to produced cloth needed by the latter. However a good deal even of the coarse cloth produced at this level was marketed through middlemen. At the second level of development, the middlemen sought to ensure a regular supply of goods of a specified standard by advancing cash (dadan) to the artisans. He also invested in raw material purchased beyond the means of the artisan in industries involving high value inputs including silk textiles. The third level saw the expansion of the work group beyond the family unit, the intervention of one or more middlemen in the procuring of raw material and marketing of produce and in certain cases even the emergence of proto capitalist factories. Bhattacharya notes that the traditional cloth industry had units located at all three levels though the majority of weavers were in the second level.  

In terms of Sheer scale of its cloth manufacturing industry Azamgarh, at this time one of the leading districts of the area that came to known as U.P. The cloth produced here had long enjoyed a certain regional renown, the district is mentioned in the Ain-i-Akbari along with Banaras and Jalalabad as a cloth manufacturing centre of distinction. Mubarakpur the largest weaving town in the district when the East India company took over, was known for its compound cotton and silk, tassar and wool cloths. Maunath Bhanjan (or Mau) had been famous from before the days of the Nawabs of Awadh for its fine muslins, in the weaving of which counts as
high as 150s were used. Kopaganj, six miles from Mau had developed since
the middle of the eighteenth century into another major centre of textile
production. Nearby in other districts there were other centres renowned for
the particular kinds of the cloth that they produced. There are some
important pieces of evidence from the second half of the nineteenth century,
regarding their less well known brethren in other small towns and villages.

Any accounts of the fortunes of the textile industry in eastern U.P. in
Course of the 19th century must begin with the famous, if mistitled company
investments. In Gorakhpur and Padrauna towns, major weaving centres of
the Gorakhpur district located just north of Azamgarh, where the
commercial representatives of the East India Company reported on arrival in
1803. Numerous weavers desirous of entering into the Hon’ble company’s
employ. Numbers of them have evidently migrated from the district in the
preceding 30 or 40 years and gone to live in the Nawab Wazir’s dominions
in Awadh. There were 49 houses of weavers that had settled in Tanda
(Faizabad district) in this way. The Company’s commercial Resident at
Gorakhpur and its Reporter General on External Commerce based at Patna,
found in this clear evidence of the misrule and refine that Gorakhpur had
fallen before the coming of the English. But in passing the Reporter –
General noticed another factor of significance in the migration of the
weavers. The 49 households were move to Tanda, it transpires by the liberal
encouragement of a private English merchant, J.P. Scott who gave each
weaver a bounty of four rupees and advanced money to able them to
purchase their looms and thread.
By the beginning of the 1830s, there had been a reversal in the direction of flow of textiles product between the British metropolis and its Indian colony. What the consequences of this reversals were for the cloth manufactories of eastern U.P. It is difficult to compute with any exactness. Not only are statistics for the earlier years unavailable, the available statistics are also difficult to use. Thus J.R. Reid⁶, a painstaking official who has left us a very detailed and valuable account of the results of his survey and settlement operations in Azamgarh district in 1877, declared it impossible on the basis of the very imperfect returns he had to reach a conclusion as regards the quantity and value of cloth manufactured in the district or the commodities imported into it.

All reports from the middle and later decades of the 19th century seem to agree that the spinning industry suffered a secular decline over this period. In Azamgarh, the decline of traditional spinners like the Katuas of Mau and other specialized manufacturing towns and villages, was rapid and unchecked. More and more, as the 19th century progressed, English thread came to be used instead of local yarn even in the manufacture of cloth for local markets. While none but the more wealthy classes appear to have worn any other than the manufactures of the district in the 1830s. It was observed at the same time that English twist had even at early date began to replace local thread. By the 1870s it was being noted that anyone who wished to dress, with a certain degree of gloss⁷ (without doubt a growing number) used English cloth or local cloth made from English yarn⁷.
In the report on the new settlement of Azamgarh district at the latter date, J.R. Reid observed that in Mau where earlier thread had been spun of such fine quality that it sold for its own weight in silver quality spinning was finished, the Katuas of the town now lived chiefly by shop-keeping and petty trading. The spinning of cotton, wrote William Hoey from Lucknow just a few years later has dwindled to almost nothing for it has been found cheaper to import European twist and yarn for weaving purposes.

The indigenous hand-spinning industry was early on the slide. For most of the 19th century it was in the sphere of weaving that the real competition occurred. Here the traditional sector put up a stiffer resistance. The records shows that the cheaper, coarse (and more durable), varieties supplied by the handloom weavers as well as some of the finer cloths and unusual mixtures which could not easily be matched in conditions of factory production, continued to be widely sold. At the beginning of 20th century, at least one-third of the cloth worn in U.P. was woven by handloom weavers and perhaps a million people were dependent for their livelihood on the proceeds of weaving.

The weavers of Lucknow have been ruined by the imports of English goods. Hoey’s words written in 1880s echo the kind of report coming in from so many different parts of northern and central India towards the end of the 19th century. The jolahas of Lucknow are fast leaving the city and seeking a livelihood in service. East of Lucknow the Jamadani or figure muslin weaving of Tanda and other places in Faizabad district was under severe pressure. The town of Tanda had approximately 1125 looms at work.
in 1862. Due to cotton famine many weavers left their trade (and their homes). At the end of the 1870s there were estimated to be no more than 875 looms working in the town. And whereas before the annexation of Awadh in 1856 Tanda had exported more than Rs. 1.5 lacs worth of cloth to Nepal. It was now said to send less than half that quantity. Jais and Rae Bareli in Rae Bareli district where very similar work was done, suffer similar fate. In 1840s in the town of Jais there were 600 julahas families, all of whom supported by weaving. By 1890s no more than 200 of these remained. In Rae Bareli town too by the later date, no more than one in ten of 150 resident julaha families worked their looms. Just over three decades later in 1931 the census commissioner of U.P. recorded that fine muslin weaving of Jais, Nasirabad and other places (in Rae Bareli district) is now extinct.

Lucknow, Faizabad and Rae Bareli districts were all part of the kingdom of Awadh which was taken over by the British in 1856. It might be supposed that the end of the Nawabi administration automatically ruin of the indigenous cloth manufactures. However, the abolition of the court was too narrow a reason for the decline even of the superior fabrics. In addition, the massive influx of Manchester goods that caused the downfall of the traditional Industry.

In 1803 the aurang of Mau was founded by C.R. Crommelin to be in its infancy, there were very few weavers settled in it. The Resident was informed that somewhere between 450 and 500 looms were at work and judging from the piece-goods that he received from the local weavers
between February and July 1803. He felt that he could get no more than 1000 pieces a month from Mau by the close of that year. All the same time, he would obtain 1500 pieces per month from the Kopa aurung (this aurung was firmly settled), 1500 pieces from the Maharajganj aurung which lay on the borders of Awadh (Tanda, Nawabganj and other places in Awadh were full of weavers, many of whom might be expected to migrate to the Maharajganj aurung once the value of the company’s protection became clear) and 2500 pieces from the Azamgarh aurung which have been the most productive upto July 1803 and in which presumably lay Mubarakpur a flourishing place at the time of cession to the company with an estimated population of 10,000 to 12,000. Perhaps a quarter of whom were weavers.

By 1830s, Thomason was already observing that the demand for the local cloth was much diminished on account of this competition. The decades that followed hastened the decline. Reid remarked on the cloth trade of Azamgarh district that still important. It was much less than it used to be. Of the industry in Mau, he could only say that it was not quite dead. His summary statement on the manufactures of the town for the traditional cloth industry in eastern U.P. as whole.

Private Enterprise for a time kept up the trade of Mau after the abolition of the (East India) Company’s monopoly, but the introduction of English-made thread and cloth into this country has give a great blow to it. The place is now in a state of comparative decadence and many of the weavers are said to seek a livelihood elsewhere.
The number of the weavers at work in the eastern region declined over this period. J.R. Reid provides a figure of 13,058 looms at work in Azamgarh district in 1877, a fall of 624 from Montgomery’s estimate of 1837. But we cannot say whether the decline from the 1837 level, when the cloth industry of Azamgarh was already feeling the effects of English competition was greater or less than this difference.

One point may be made certainty. There were very major fluctuations in the numbers involved in the handloom industry, periods of a sharp down turn followed by not insignificant revival, we have noticed this already for Mau at the turn of the 19th century. Another well documented example comes from the early 1860s when weavers all over Azamgarh suffered a serious set back. The disturbed years of 1857-59 followed in 1860-61 by famine and by general inflation. The great increase in the price of raw cotton, as the external demand for the commodity shot up with the outbreak of the American Civil War together with reduced demand for their products resulting from famine and inflation hit the weavers hard. The number of looms at work in Azamgarh district fell from 12,500 in 1860 to 8,680 in 1863. The falling off in quantity of work actually done was no doubt greater than these figures indicate.\(^1\)

However for Azamgarh and its major cloth manufacturing Centres – Mubarakpur, Mau, Kopaganj and so on the reversal proved to be a temporary one. Barely a decade after the American civil war Reid made his calculation of 13,058 looms being worked in the district – roughly 1700,
1200 and 500 in Mubarakpur, Mau and Kopaganj respectively and 100 and 300 in ten other villages, apart from smaller numbers scattered all over.\textsuperscript{18}

At the end of the century, we learn from survey conducted in the 1890s, the handloom industry of Azamgarh district was certainly on the decline, but it was still moderately flourishing and a fair export trade in cloth was being carried on.\textsuperscript{19} The plague took its toll: here and other districts, it was migrant weavers who carried the disease back with them from Bombay and other industrial centres and the weaving community suffered terribly.\textsuperscript{20} But opening of a railway line through the district (and through the town of eastern U.P.) in 1898 occasioned some revival of trade, fewer weavers now left Mau, the district Gazetteer of 1911 noted ‘to seek employment in the mills of Bombay, Cawnpore and Calcutta.’\textsuperscript{21}

The population of Mau, like that of Mubarakpur was said to have increased in the later part of the nineteenth Century. For Mau the census gave 11,315 in habitants in 1872, 14,945 in 1881, 15,547 in 1891 and 17,696 in 1901.\textsuperscript{22} Whatever the reliability of these various enumerations, Mau appears to have survived up to that time as a trading and manufacturing centre\textsuperscript{23}, and even registered some growth in the last decades of the century. The opening of the railways and the establishment here a important railway junction helped in the process. One might argue on the basis of this evidence that the number of workers engaged in the local handloom enterprise probably well throughout the nineteenth century.

But the middle of the nineteenth century, the fine cloth manufactures of Mau were facing a near total collapse of their market. Their history for
the next three quarters of a century is the history of an anxious search for alternatives. New kinds of goods came to be produced. By 1860s, the *dakhini Pagri* (literally Southern turban for sale in central and western India) had become an important product in Mau. In the 1870s Reid observed that coarse cloth of country-spun thread, some better cotton cloths and some of the silk and tassar cloths were made at Mau. The *dakhini pagari* had become Mau's staple product. Many varieties of red and white turbans were manufactured but in the majority of them the texture is loose and the cotton used is of low counts. The quality of the finished article being considerably inferior to that manufactured in Buland Shahar in western U.P.\(^{24}\)

The decline of the indigenous cloth manufacturing industry in the middle and latter nineteenth century is reflected most dramatically in the reports from the old established centres of quality production. But some of the forces that threatened the existence of some of these places as industrial centres also seriously affected the lower reaches of the cloth industry. We have noticed this already in the case of hand spinning. A closer examination of the circumstances in which apart of the handloom weaving industry survived indicates some of the adjustment that weavers at all levels had to make in the face of the challenges thrown up the nineteenth century.

Among the factors of obvious importance responsible for the survival of local cloth manufactures was the inaccessibility of many areas untouched for long areas by railways and other modern means of communication. Yet as the fate of the hand-spinning industry and of a good deal of weaving even before the coming of the railways suggest this was perhaps not as critical an
obstacle as it is sometimes made out to be. Banjaras and other wandering traders had after all carried exotic and luxury items as well as low value commodities such as salt into distant regions. If there was a profit in its we may expect that the entrepreneurs would be available to carry the cheap yarn and piece goods produced by the mills into the deep countryside.

Another factors of significance was that the mill made products coming from England tended to be cloth (land yarn) of middle and high quality. The production of coarser cloth using low counts of yarn remained primarily the concern of the Indian manufacturers. Most of the cheaper materials required by the rural poor continued then to be provided by the handloom weavers whose products were preferred besides on account of their greater durability. This last advantage was lost to some extent as the finer, more even but less durable machine made yarn came to be used by the weavers. But local cloths intended to poorer consumers maintained their position fairly well through the nineteenth century.

At the time of American civil war, European cloth interest concern that the shortfall in the Indian demand for their product might have been occasioned by increase indigenous manufacture. The official enquiry in the North-western Provinces (Later, the Agra Provinces of the U.P.) revealed that these very fears had seen:

a marked and distressing contraction of local manufacture. This...is less observable in the Western districts where perhaps from a sixth to a fourth of the looms in the cities and towns have stopped working. But in the eastern district the trade has altogether decayed and within the last two or three years (i.e. 1860-61 to 1863) the falling off is shown to have reached a third
and in some district a half of the looms and even of the remainder a large portion are only worked occasionally.\textsuperscript{27}

The different consequences in the eastern and western districts of U.P. according to officials from the fact that the eastern districts (including all of Banaras and Gorakhpur divisions and Awadh) grew little cotton, whereas crop was grown on a large scale in the western districts. Of the cotton they produced the cultivators of the western district were reported to be retaining for domestic use a quarter to a sixth, even in this period of inflated demand and soaring prices for the raw material. From this women spun the thread and weavers were to make specified kinds of cloth. In this way the govt report noted that a large proportion of the population in the western districts are supplied with clothing.\textsuperscript{28}

This enquiry bring home is that handloom production survived in these years of crisis, not in the tracts that were away from the railroads but in the areas where cotton was grown and where it was consequently still available to men with meager resources. Thus in a period of marked inflation it was not so much the lack of penetration of wider market forces and with them of European manufactures but the availability of the raw material at an accessible price that ensured the continuation of the traditional industry.\textsuperscript{29} In districts such as Azamgarh, Ghazipur, Gorakhpur and Banaras in eastern U.P., too any cotton grown for local consumption may be expected to have helped the weavers survive. Here even in the pockets where cotton was cultivated on a significant scale the weaker position of the tenant cultivators vis-à-vis the landowners and other
exploiting classes would have rendered more difficult the possibility of retaining much of the produce for local use. Consequently the contraction in handloom production was marked and distressing. All over U.P. even in the Western region, weavers in the larger towns unable to provide the capital required to purchase material for their trade and forsook their looms.

Those survived in the trade appear to have done so by a further reduction in their margin of profit. It was found in 1863 that the imports of foreign yarn had contracted sharply from the position of a decade earlier. Many weavers reverted in this era of rising prices to the use of local yarn and the Production of cheaper, coarser cloths. It was a situation evidently loaded with contradiction. The weavers of Mau told the commissioner of Banaras in 1863 that they would make the finest quality (cloth) cheaper than the coarser, as the latter required more cotton thread. The scarcity of raw material reduced the value of their labours and weavers of Mau and elsewhere were forced to accept work on much less advantageous terms than before.

**DECLINE OF HANDICRAFTS**

Before the advent of the British traders on the Indian soil, the industrial development of this country was not inferior to the more advanced European nations. India was regarded as the mother of cotton industry. The iron industry was developed to an extent that enabled the country to export its finished products to other countries. The arts and crafts of the blacksmith, carpenters, potters, dyers served the local needs of the villages. Besides, there were highly specialized arts and crafts which catered to the needs of
the special customers, the more well to do families and the Royal families. From the industrial point of view, the most interesting section of the population was the artisans who not only produced arms and leather garments but also textile fabrics, carved stones wood and ivory jewelry and other articles of luxury of high artistic value.\textsuperscript{34}

The organization of industries in colonial period can be studied under two heads – (i) rural industries and (ii) urban industries. Most of the rural and agricultural industries were carried out in the cottages of the workers. They served mostly local needs i.e. they manufactured utility goods such as earthenwares, coarse cloth and baskets. The main characteristics of the rural industries was that they were spread throughout the length and breadth of the country. Since each village led a self sufficient life, it had its own industries confined to the primary needs of man. Naturally there was no specialization and the economic organization was of primitive character. The artisans plied their traditional occupation uninfluenced by the outside world.\textsuperscript{35}

The urban industry, at the beginning of 19\textsuperscript{th} century, consisted of handicraftsmen producing fine textile handicrafts and among them, the cotton industry was the one found almost all over India. Dacca, Krishnanagar, Lucknow, Ahmadabad and Nagpur etc. were the main centres of cotton textiles. Next to textile was the metal industry turning out Brass, copper and bell metalwares. The chief centres of which were Banaras, Nasik, Ahmadabad. Arms and shield were manufactured in Panjab, Kutch and Sindh. The towns of Rajputana excelled in all enameled jewellery, such
as stone carving. The products served the needs of special groups of buyers such as princes and their courts, foreign travellers and foreign markets. Dr. Buchanan found that ‘In the towns every trade had a chief called by various names such as Chaudhuri, Mistery, Dungriya who received petty free from his associates and regulated the price of labour and commodity as well as settled small disputes’.

When in 1813 the East India Company obtained the charter for trade with India, it was not to exchange as far as possible the manufactured goods of India but to carry the manufacture of India to Europe and England. At the end of seventeenth century, great quantities of cheap and graceful Indian fabrics imported into England used to find such favours that the English manufacturers of woollen and silk textiles were seriously alarmed. Acts of Parliament were passed in 1700 and 1721 absolutely prohibiting, with a very few specified exceptions, the employment of printed or dyed calicos in England, either in dress or in furniture, the use of any printed or dyed goods of which cotton formed any part. So much bullion was exported to India that there was an agitation against East India Company which was inflicting an injury on the British nation. However, the supremacy of Indian handicrafts could no longer be maintained because of certain technological economic and political developments. The Industrial revolution created a powerful industrial and manufacturing class in England which scored a victory over trading capital.

One of the most important reason for decay of indigenous industries was the industrial revolution in England. Between 1760 and 1820 vast economic changes associated with industrial revolution took place in England as a result
of which England soon became the workshop of the world. As referred to elsewhere, Indian economy had to pass through a great stress and strain in making contribution to the process of industrial revolution in England. The protective Legislation in England against the import of Indian manufactured products stimulated the mechanical inventions and discoveries in England. After their victory in 1757 which sounded the death knell of Indian handicrafts, the East India Company drained enormous wealth from India and this plunder provided the necessary capital for industrial revolution in England. In fact the industrial revolution and the progress of mechanization were almost contemporaneous with the assumption of Dewani in Bengal by the company in 1765.

Though the products of machine did not at first compare favourably with the artistic products of handicrafts yet by successive inventions they were improved in quality. Their cheapness helped them to displace Indian goods in the foreign markets and later in the home market. The finest branches of textile craft were the first to suffer. The Indian weavers could produce the finest quality but in the matter of price they were beaten up by imported products. The result was the wholesale destruction of the Indian fine textile industry. The old and populous manufacturing towns of Dacca, Murshidabad, Surat crumbled. The art of spinning and weaving became extinct. The same story was repeated in other Indian industries like Iron smelting, glass, paper and ship building. The competition was made more severe by the introduction of railways and roads, opening of Suez canal and the consequent reduction of steamer freight. The development of railways created a market for the British
goods in India and facilitated carrying of raw material from inland centres to harbours and British products from the harbours to the inland centres. The railways in India helped in ruination of Indian handicraftsmen, India in the eighties of the nineteenth century afforded the spectacle of a huge country with decaying handicrafts, with any other form of organized industry almost non-existent and the consequent falling back upon land.39

At the beginning of the nineteenth century, the Urban industry of India was mainly in the nature of handicrafts, producing fine textiles or other luxury products for the aristocracy. Though the urban industry was limited in its scope and extent. It was the best organized industry in India and also it was the first to feel on account of its position, the effects of foreign competition. There is no doubt that in these handicrafts Indian urban industry had reached a hight-water mark of excellence. The product of Indian industry enjoyed a world wide reputation. The calicoes and the corahs of Bengal formed an important item of the Indian trade in the trading days of the East India Company. The high quality of these artistic products has never been questioned. It was their special merit that while maintaining their high artistic standard they never sacrificed utility.40 Dr. Watson remarks: ‘The Indian taste in decoration is in the highest degree refined. There is no waste of ornamentation... nor is their any lavish expenditure of ornament which so often purchased show at the expense of comfort.41 A Frenchman, M. Blanqui when he saw the Indian section of the great Exhibition of 1851, paid high compliment to Indian craftsmen when he said : ‘Les Indiens sont les Francais de l orient pour le genie industriel’ (The Indians are the French of East for the genie industry).42
The establishment of British rule also affected handicrafts in another way, for it indirectly weakened the power of the guilds and other bodies which regulated trade and saw to the quality of the materials used. As soon as the supervising bodies were removed, many evils began to creep in immediately. These were for example, the adulteration of materials, shoddy and slovenly workmanship. These at once led to decline in the value, artistic and commercial of the wares.\(^{43}\)

Apart from these, there were certain other factors. The disappearance of the courts of Nawabs and Rajas also struck a heavy blow to the Indian handicrafts. The process was not rapid in the beginning but there was a steadily diminishing demand. The abolition of the courts of Nawabs meant that the fine articles which were in demand by the nobles for state occasions and for display in durbar and on other ceremonial occasions were no longer required. For example S.M. Hadi in his monograph 'Dyes and Dyeing: North West Provinces' writes that the Nawab of Oudh indirectly, fostered a flourishing dyeing industry in Lucknow by prescription that the nobles should appear in different coloured cloth on different festivals during the year. The decline of dyeing industry in Lucknow after 1856 was very rapid. When the courts were abolished, handicrafts and arts also began to decline. According to Gadgil ‘the immediate effect of this was the stoppage of production of the highest class of goods such as would be required only by the princess and the high nobles on a big state occasion.’\(^{44}\) Again with the establishment of foreign rule, certain influences made their entry into India which proved fatal to the existence of these handicrafts. The craftsmen copied western pattern without proper
understanding. The products were in many cases bad copies of the original and lacked the life and vigour of the Indigenous products. The raw materials were mostly adulterated and hasty workmanship was resorted to. The newly created educated class due to the acceptance of European standards turned their back on the indigenous handicrafts. One of powerful effects of a foreign rule is the imposition of the conquering people’s ideals on the conquered, and the newly created bourgeoisie showed itself during the latter half of the nineteenth century extremely ready to accept European standard and to pour scorn on every thing indigenous. This was specially in the case of arts. Consequently the production of indigenous handicrafts suffered. Moreover the British rule had weakened the organization of the guilds which supervised the quality and workmanship of the products. As a result, there was a marked decline in the artistic and commercial value of the wares. England during this period prohibited the export of tools and machinery and also the migration beyond the seas of artificers and workman employed in printing calicos, cotton, muslin and linens. Thus India was denied the opportunity of receiving apprenticeship in large scale manufacturing production. The causes of the decline of handicrafts have been nicely summarized by Sir William Hunter. According to him, many circumstances conspired to injure the Indian Industry in the last century. England excluded these fabrics not by fiscal duties done but by absolute prohibition.

The flow of cheap British goods also helped in the decline of village artisan industry. The artisans and craftsmen had their place in the village economy where they exchanged their products on customary basis for the food
and the raw material necessary for their occupation. But the inflow of machine
made cloths, import of cheap dyes, kerosene, increased use of enamelled wares
imported from England and the various famines that broke out in India from
time to time contributed to the decline of village artisans industries. The
decline affected unevenly, the village handloom industry, carpentry, tanning
industry, dyeing pottery and oil industry. Although some of the artisan
industries like village potters persisted due to the poverty of the rural
population, the overall tendency in all village industries was towards decline.  

The whole basis of old village economy, the union of agriculture and
domestic industry received a blow. Millions of ruined artisans and craftsmen,
spinners and weavers, potters, smelters had no alternative except to crowd the
agriculture. It is in this way that India was transformed from a combined
agricultural and manufacturing country to an agricultural colony of the British
manufacturing capitalism.  

The deliberate destruction of the towns and village handicrafts industry
and the neglect of the overall industrial development in the nineteenth century
constitutes the saddest chapter in the British colonial history. As observed by
Wadia and Merchant ‘the economic history of India from 1770 to 1870 is the
history of the dislocation of India’s balanced economy, the ruralization of her
population, the progressive decay of handicrafts and village industries. In short
the old industrial structure was shattered without being replaced by a better
organization.  

TECHNOLOGICAL CHANGE

The main areas of technological change were warping, sizing, weaving and dyeing of yarn allied to major weaving traditions. The average Indian weaver in 1900 produced very complex cloth that was surprised crude in appearance. European were routinely struck by this apparent incongruity. The weaver sat in a pit dug in his living room in front of a wooden frame which held the few pieces of roughly carved sticks that functioned as reeds and heddles or healds, laboriously passed the shuttle from one end to another then manipulated the warp threads by hand or with the help of a child to weave the most complex designs. The house was constructed in a special way to allow light to fall on the loom, specially the windows in a weavers house tended to be placed very low. The warp threads stretched a few feet in front and were tied to or hung from another horizontal stick.

The preparation of the warp was just as remarkable. At the centre of the weavers quarters in an open space shaded by trees, a few sticks were fixed on the ground. The warper would take a hank of yarn, fasten a thread to the first stick and then go on. Unreeling it round the sticks until the last one was reached when the course would be repeated in the reverse direction. Only one thread at a time could be reeled in this way and before the threads required for a given width of warp were reeled the warper would have walked several miles. In 1941 a survey team found a 12 year old Bengali girl who walked 17 miles to prepare the warp of a 10 yard Sari of about 3000 ends for which she earned Rs. 0.125 or little over 2d. When this work was finished, the thread was sized that is smeared with starch paste, either by using a brush or by
immersing the whole warp in the compound. Even such intensive labour was not enough to occupy a weaver for more than a few days at a time. And several months of the monsoon, the weaver and his family would be idle for no other reason than that the rains made warping impossible.

The combination of primitive technology and fine craftsmanship had inspired many provincial officials to believe that technological development was possible and that it was needed to strengthen or preserve craftsmanship. The problem was to find a better but cheap option and also to choose among competing options. Twentieth Century experiments addressed either loom construction or yarn processing. In India the two spheres came to be associated with mutually critical schools of thought on handloom development. Those who wished to concentrate on processing were in fact advocating a division of labour between processing and weaving and selective mechanization of the more standardized task processing. Those who concentrated on looms were in effect trying to speed up the weaving process itself. The former demanded a slower change in the nature of the weaving firm, but implied redundancy of labour or its reorganization in processing factories. The latter required a different type of weaving firm.

In both directions technical alternatives became widely available in twentieth Century, largely due to the efforts of Provincial governments in popularizing them. It would not be wrong to say that this was the only significant example of direct government intervention in the promotion of small-scale industry. By 1900 three key innovations had been introduced in demonstrations in India and selectively introduced to weavers. From the traditional pit loom and stick warping, there was change towards the fly-shuttle loom a set of ‘frame looms’ and semi-automatic looms, mounted on wooden or
cast-iron frames, and drum warping. The frame loom took up much less space, could weave longer lengths of yarn. The drum warping system was more capital intensive than its predecessors but it popularized the use of a warp beam, and allowed for sizing and warping to be done as a joint operation. Among looms, the fly shuttle was easily affordable, whereas frame looms and the warping mill required a great deal more capital. There were several advantages of a fly-shuttle or frame loom over the traditional loom. The shuttle moved faster. Weaving broader widths in a throw shuttle required two persons. In the fly-shuttle the picking motion was easier and one person could do the work.

Comparisons of average cost per yard show that technological change in handloom weaving can not be explained by the need to compete with the power loom. We compare three loom types, the fly-shuttle, the frame loom and power loom.

### Table 1. Cost and Productivity of four types of Loom, 1941

<table>
<thead>
<tr>
<th>Types of loom</th>
<th>Cost (Rs.)</th>
<th>Output per loom (Yards daily)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pit throw-shuttle</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Pit fly-shuttle</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Frame loom</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Power loom</td>
<td>315</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: Productivity refers to a standard cotton cloth output per loom is based on various surveys of maximum picking rates, which suggest a ratio of roughly 1:2:4:10 between the four loom types. This ratio is only an approximate measure of the productivity differences. Exchange rate in 1941: about Rs.10/- £.

These calculations suggest two points. First, the difference in physical productivity between the improved loom and the power loom remained wide. And second the Mill weavers did earn higher wages than the handloom Weavers, the productivity gap could not compensated by the wage gap. The ratio of relative wages between a pit fly-shuttle loom, a frame loom, and a power loom that would enable all three to achieve the same average cost is approximately 1:2:8.

Why did the handloom survive at all? Two Factors were important First it could generate relatively greater value in certain classic of designs that could not be woven on a power loom without slowing the loom excessively. And second, marks segmentation ensured that there was sufficient demand for those types of clothing where the handloom had a relative advantage.

Technological change happened because the new tools involved either a diversification or an improvement over the throw shuttle in lines of work in which the weaver enjoyed a market niche. The fly-shuttle was not easily accepted in the very complex figured weaving because weaver felt it would lead to excessive breakage of thread or would interfere with the quality of the design. But it was more popular in cloth the combined a special preference for handlooms with simplicity of design. Thus in plain cotton weaving with 80s or 120s yarn for which central Bengal was known, the fly shuttle was popular. The frame loom was relatively more common in silk weaving factories.53

Another major field of challenge and opportunities was yarn dyeing. Traditional vegetable dyes could provide striking and fast colours, but could not create a great variety either in shades or in designs. Coloured cloths
survived in handlooms where dyed yarns were used in making woven designs. Traditional printing on the other hand had suffered because of foreign competition until the 1870s the printing industry was in a depresser state because of the popularity of Lancashire printed textiles.\textsuperscript{54}

Dyeing according to the old Indian method involved very complicated process and the dyer had to posses a considerable degree of skill. The competition of foreign goods was in this case as important factor. Aniline dyes were introduced into India about 1870. They were at first of a very fleeting quality and greatly inferior to the Indian dyes. But they had two important advantages. They were cheap and they were very easy to use. Their spread in India was rapid and by 1890 Indian dyes had almost completely gone out of use. Mr. Fawcett says : the truth is that the introduction of cheap aniline and alizarine dyes into India has had the effect of throwing open the industry to all who care to take it up, as dyeing does not now require the special study and knowledge which was necessary when the native ingredients were used.\textsuperscript{55}

Thus we find that the description of technological change in handlooms reflects this, in that market segmentation and particularities of products and designs mattered to choice of techniques. In effect it also suggests that technological change in handlooms can be seen as a response to change within the handloom weaving industry, rather than as a response to competition from the powerloom. In standards narratives, the history of the artisanate tends to be told as a subplot in the story of capital intensive industrialization. The intention here is to emphasise by contrast, the role of factors internal to the artisan economy such as specific markets and capability. This is not to suggest that
external competition played only a marginal role. The power loom have a many sided impact that went beyond destruction of livelihoods. It almost certainly cheapened labour for the viable handlooms by exposing many others to unemployment and insecurity, cheapened yarn and stimulated yarn trade that benefited the handlooms capitalists, was itself a superior option for the rich weavers and displayed the benefits of centralization in processing.

So far leather manufactures are concerned that the long-distance trade in raw material had complex effects on the artisan engaged in leather articles. It did help the manufacturer, especially the urban artisan, by improving the quality of hides, and thereby enabling diversification. But it also constrained the rural leather worker and those engage in traditional articles. On the demand side, trade altered tastes. On the supply side, trade created a shortage of hides.

Many old uses for leather were in decline. The oil and perfume containers, the water-bag, saddlery and embroidered shoes were essential ingredients of urban life in the early nineteenth century but quickly faded away in the interwar period. Glass and ceramics replaced leather in some its uses. Piped water did away with the Bhishtis. Civil demand for saddlery decreased with the extension of motor transport in the cities. In case of shoes, the integration of internal commerce at first helped the leather manufacture. J.L. Kipling, the Principal of the Mayo school of Art at Lahore, wrote that the trade (in embroidered shoes of Delhi) has greatly increased (since 1864), for the railways has opened new markets and shapes unknown in the Panjab are now made e.g. the Maratha shoes.\(^56\)
What is remarkable that the ease with the Cobbler seemed to reorient his skills. Before the mutiny, leather artisans supplied European residents with the style of shoes they wanted. In the 1870s, the Mochis used imported leather in the northern towns to manufacture shoes and saddlery. In 1908, Chatterjee noted in the north a great demand for country made European shoes known as the boot, the supply which is not equal to demand. In the towns, those making ornamental shoes began to make boots and shoes of standard shapes, harnesses, bags and portmanteaux. This was surely a profitable trade, as any account of the Mochis as a caste suggest. In 1918 Ewbank observed that the boot-making classes seem to be doing very well. Many of them in Gorakhpur, Kanpur, Lucknow and Calcutta were engaged by army contractors to supply large consignments of munda shoes during the war.

The trade dislocation immediately after the first world war was a decisive event. In 1920-21, a large part of the capacity in tanning had been created during the war was threatened by unemployment. Consequently input prices were low. At the same time, the exchange rate having appreciated due to inflation in silver, many new firms decided to import machinery and tools needed for boot and shoe manufacture. Manufactures had to rely on the home market, while the global trade in leather grew, many countries had set up stiff protection for their own leather industries. If the 1870s started the hide trade and the war started larger factory enterprise, the early 1920s were the time of transition from intermediate to finished goods manufacture.

In 1908, Chatterjee found leather footwear to be a prominent industry in Agra, Lucknow, Kanpur, Allahabad and Banaras. After twenty years, Agra
was probably India’s largest centre of leather manufacture. In 1923-4, this industry employed in Agra town alone, 25,000 persons. In Allahabad in 1930, shoe-making took place in Mochi-owned Karkhanas.

Thus the integration of colonial north India into a world market created an export boom for Indian hides and skins that began in 1870s and continued for 1920s. Earlier the craft was performed largely as a service where the rural labourer customarily received hides free and supplied finisher goods to peasant employers. The export trade created a large demand for hides outside village. In this process, created a market for the craftsman’s labour, enabling him to leave the customary labour services. These development encouraged urbanization of the industry, large-scale migration and start of factories in the cities. Thus another effect of export trade was felt in technology, as quality control became imperative.

On the other hand, leather goods imports were at first threat to domestic production. Imports also altered tastes and standardized products sold in the home market. The competition between the imported and the artisanal footwear was less in cost and more in quality. But such an adaptation again pulled the country craftsman closer to the trading points and turned into an employer of labour or a labourer himself.

The focus of this chapter has been on conditions internal to weaving that favoured technological change or weakened impediments to change. Favourable conditions included what is called here a commercialization of handloom weaving, which created a space for capitalist to operate and generally benefited capital more than wage earners. Constraints arose, first of
all from the traditional (restriction) mode of organization which was incompatible with many of the technological alternatives. The family firm in rural areas had limited means to employ new tools needed different circumstances that is new firms, different markets and products. This requirement explains why diffusion and its incidence were limited.
NOTES AND REFERENCES


5. Ibid., Para 115.


8. Ibid. P. 147.

10. Note by Sri Ram Bahadur C.I.E. on the Handloom Industry, Industrial conference held at Nainital, 1907, P. 44, Notes on the Industries of the United Provinces, 1908, PP. 10-11. For India as a whole during the five years 1924-25 to 1928-29, handloom still provided some 25 percent of the total consumption of about 500 million yards of cloth, while 40 percent was supplied by Indian mills and about 35 percent was imported. Report of the U.P. Provincial Banking Enquiry Committee 1929-30, Vol. III, Allahabad, 1930, PP. 386-7.


21. Drake-Brockman, *Azamgarh District Gazetteer*, P. 255. Sharp fluctuations have occurred since then as well. The national movement gave a considerable fillip to the indigenous handloom industry especially in the 1920s and 1930s restored the fortunes of the local cloth industry. Mau and Mubarakpur are probably bigger centres of weaving today than they were before but the conditions of the trade now are very different.


23. Crommelin, the Commercial Resident for Mau and Azamgarh, was given a figure of about 10,000 as the population of Mau in 1803, which he considered exaggerated. But Reid in his report on the district in 1877 clearly declared his opinion that in the 1780s the town of Mau was larger than now. *Azamgarh* SR, P. 15.

24. Judgement in Trial no. 13 of 1863, Court of A. Ross, Sub-judge: Govt. V Sheonarain Rai and others, Appendix D to ‘Petition of Hindu inhabitants of Mhow to secretary of state for India in Council’.


29. Silberrad, Writing in 1898, accounted it as a specially powerful argument in favour of handmade cloth in the cotton growing districts: the women of the cultivators household spin some of their home-grown cotton into yarn which the Kori then weaves for them, *Monograph, op.cit.*, p. 46.

30. See for the example of Sugarcane cultivators in an era of considerable expansion of the area under the crop and of the establishment of modern factories for the refining of sugar, Shahid Amin, *Sugar-Cane Cultivation in Gorakhpur, C. 1890-1940*, Passim.


40. J.F. Royle, *Arts and Manufactures of India*. Lectures on the result of the Great Exhibition of 1851, First Series.


42. Royle, *op.cit.*, p. 534.

43. Many of trade organizations which supervised the quality of the work etc. remained in existence till comparatively recent times. Especially was this the case in such industries as wire and tinsel, where it was necessary to guarantee the purity of the raw material used for keeping up the reputation of a place. See E. Burdon, *Monogrpah, Wire and Tinsel*: Punjab, 1909, in many places eg. Lucknow and Delhi, the industry began rapidly to decay as soon as the supervisory bodies vanished. See W.R. Lawrence, *Valley of Kashmir*, pp. 373-374.


49. ‘The tools .... are so coarse, and apparently so inadequate to their purpose that creates surprise how he can ever effect his undertaking’, Colebrooke, H.T., *Remarks on the husbandry and commerce of Bengal*, Calcutta, 1804, p. 31.

50. *Fact-Finding Committee (Handloom & Mills)*, Delhi, 1942, p. 295.

51. A comprehensive statement of the technological problem in handloom can be found in three essays presented at the first industrial conference at Banaras, 1905 and published in the Proceeding of the Conference.
The essays are by Raoji Patel, Director of Agriculture, Baroda State ('Handloom Weaving in India'); E.B. Havell Superintendent of the Calcutta School of Art ('Powerloom mills and handlooms') and Alfred Chatterton, then superintendent of Madras School of Art ('Industries work in India'). Havell played a significant role in popularizing the fly-shuttle stay in Bengal.


55. quoted by Gadgil in Monograph, Dyes and Dyeing, Bombay.


57. William Tennant, Indian Recreations: Consisting chiefly of Strictures on the Domestic and Rural Economy of the Mohammedans and Hindoos, Edinburgh, 1803.


63. H. Ledgard, ‘The Hide, Skin and leather Trades and Boot and Shoe Manufacturing in India’, *Journal of Indian Industries and Labour*, 1, 2, 1922.

64. Chatterjee, *Notes on Industries, op.cit.*, P. 98.


Chapter – IV

DEMOGRAPHIC TRENDS

The term demography is best established in France and Italy. The Germans and Scandinavians make slight use of it and has never attained to general usage in English speaking countries. Internationally, however the term has secure standing in the international Congress of hygiene and demography and the international statistical institute. It was first used by Achille Guillard in his *Elements de Statistique humaine on demographie Comparee* (Paris 1855), who regarded it as the mathematical knowledge of the general movements and of the physical, social, intellectual and moral conditions of populations or still more broadly as the natural and social history of the human species. Levasseur define it simply as the science of population, a science which ascertains the state and studies the movements – chiefly births, deaths, marriage and migrations – of population and which endeavours to discover the laws which control these movements.¹ Such a definition on the one hand suggests the historical evolution of demography from the political arithmetic of Graunt, Petty and Sussmilch and on the other its near relationship to modern vital statistics. In fact Whipple regards demography as in a narrow sense synonymous with vital statistics but also states that broadly it is “the statistical study of human life” and includes not only census and other data on the state of the population and the population movements usually recorded and analyzed in vital statistics but also genealogy, eugenics, anthropometry and statistical pathology”.² Such broad inclusion of contents as that indicated in the latter definition should be
avoided. On the other hand demography should be defined to comprise more than vital statistics. The study of the latter properly delimited, is concerned with the movement of population (movement de la population, Bevolkerungsbewegung) as revealed in the statistics of birth, marriage, divorce and death is concerned with the state of the population (etat de la population, BevolkerungsStand) only to the extent that statistics of the state of the population afford basic data for the study of the vital movements. Despite the objection of Von Mayr in his Bevolkerungstatistik (Freiburg, 1897) that the term is redundant if used as synonymous with population statistics, demography may be defined as the numerical analysis of the state and movement of human population inclusive of census enumeration and registration of vital process and of whatever quantitative statistical analysis can be made of the state and movement of population on the basis of fundamental census and registration data.

Demography may thus be regarded as a kind of biosocial bookkeeping, a continuous inventory and analysis of the human population and its vital process collectively considered. There are two phases to demography, a static and a dynamic. The first ascertains and describes the state of the population. This is the function of census enumeration and analysis, which are not only exceedingly important and useful in their own right but are an indispensable basis for all studies of the movement of population or vital statistics. In the calculation of density of population, division between urban and rural population and the like, static demography and geography came into close contact, although the fruitfulness of the
cooperation between them is lessened by the fact that the census of population is necessary made by administrative units rather than by cultural areas or natural regions. The dynamic phase of demography has its function the statistical analysis of the movement of population. This includes both the physical movement of individuals from one place to another, in the study of which demography again comes into contact with geography and also with economics and history and biosocial processes: births, deaths, marriages, divorces, morbidity and natural increase or autogenous growth. But migration it could be considered as coterminus with vital statistics. The absolute numbers of the population as a whole and by various classifications of age, sex, conjugal condition and the like are not without significance. In most population literature, however absolute magnitudes have been neglected and the major attention has been given to comparative rates. The central them of vital statistics and of the demography of population movement is indeed that of the comparative rates at which the various vital processes take place. One must then distinguish descriptive demography which includes the basic data of census and registration statistics; analytic demography which includes all the statistical analysis of these data as well as calculation of rates; comparative demography which includes the comparison of the status and movement of different population at a given time and historical or genetic demography which deals with time series of demographic rates.³

Demographic method are primarily method designed to assess the size and composition of a population and their change over time.
Demographic methods can be understood more broadly as methods that are
designed to refine the study of a given phenomenon in a population by
taking into consideration the particular size and composition of that
population. Age and sex are central to these analysis, race, marital status,
residential area and socio-economic status are also considered. Demographic
methods traditionally operate from individual level data aggregated at the
group level and trace out the consequences of individual behaviour for
aggregate processes. The population size changes only with birth, death and
migration. These events have received special attention in demographic
analysis. Population composition depends on additional events that mark
transitions across categories (e.g. marriage), unless the compositional
analysis is restricted to individual characteristics that can be treated as either
invariant (such as sex) or fully determined by the passage of time (such as
age). Most events affecting population size or composition can be related to
the behaviour of an individual present in the population prior to the event.
Hence taking into consideration the size of the population yields measures
of the intensity of demographic event are believed to be more meaningful
than absolute counts of events, in particular in comparisons over time or
across populations.\footnote{4}

POPULATION CHANGE

Between the beginning and end of the 19th century India's economic
position in relation to the rest of the world was radically altered. A country
with a vast handicraft sector supplementing agriculture and its exports of
manufactures providing the basis for a considerable part of world trade
around the beginning of the 19th century. India by close of that century had no manufactures for export and an extensive position of its handicrafts sector even for internal consumption had been destroyed. At the same time she was exporting large quantities of agricultural products partly in order to pay tribute to Britain and internally its agriculture production was increasingly commercialized with rising rents and enlargement of numbers of landless labourers.

The economic and political process generated a vast demographic change. The reason for this undoubtedly lies in the fact that official all India census began only in 1872, and there is a tendency to assume that the composition of population exhibited in 1872 and succeeding censuses (the 1881 census and all subsequent censuses at decennial intervals) within the 19th century was the same as at the beginning of the 19th century if not from times immemorial. Moreover, even with census evidence there remains the difficulty of definition which Daniel and Alice Thorner forcefully pointed out.

On the assumptions of continuity in the 19th century there was indeed an important demographic shift resulting in considerable town-to-village migration as unique in the world. The shift was reflected in both short range migrations and in long-distance and inter-regional migration. Towards the end of the century there begin a reverse village-to-town migration when modern industry on a very modest scale started to establish.

The town-to-village migration rest in part on the phenomenon known as de-industrialisation that is the forced shift of a large section of Indian
population from urban handicraft to rural gathering professions and agriculture.

The term “De-Industrialisation” as used by Indian economic historians can be defined either as a fall in the proportion of the people engaged in manufacture (or secondary sector) to the total working population or as a decline in the share of the secondary sector in the Gross National Product (GNP). The latter would of course, follow the former if the level of technology, production costs and mode of production remain the same.

The proportion of the people engaged in the secondary sector to the total population at the beginning and close of the 19th century cannot be worked out for the whole country due to the deficiency of data for the earlier period. A.K. Bagchi on the basis of Buchanan’s surveys and the census of 1901 has shown a decline from 18.6% to 8.5% between 1809 and 1901 in population of Gangetic Bihar. Buchanan’s survey remained unique both in its coverage and accuracy so that Bagchi effort cannot be duplicated for other regions. But we have a very important source of information in the detailed official surveys of the castes and tribes of north India compiled officially at the turn of the century.

We begin with the castes associated with north India’s most celebrated manufacture textiles. The extent of the ruin of weaving and spinning and other allied crafts as a result of competition from British cloth imported in India has been a subject of much debate. The evidence
strongly suggests that a number of weavers changed their occupations through not all of them could take to agriculture.

**Julaha**: The main weaving caste in north-west provinces, Panjab, Awadh and Bihar, “the business of the julaha has sadly decreased in consequence of the introduction of foreign cloth. Many have transformed to cultivation and various form of labour”.¹³

**Kori**: The Hindu weaving castes of northern India as distinct from the Julahas or Momin who are Mohammadans. Population in Central Province in 1911: 35,000, in 1891 in North-west Province: 919,649. The principal occupation of the caste is the weaving of coarse country cloth but as the trade of landweaver now a days precarious and unprofitable, many of them have taken to cultivation or daily labour.¹⁴

**Orh**: A sub-caste of Koris in North-west Province (U.P.) Their occupation is weaving of coarse cloth: some of them have taken to agriculture and landlording and are dealers in grains.¹⁵

**Balai**: A tribe of weavers and labourers in central Doab. Weaving is their main occupation but some of them now work as masons and day-labourers.¹⁶

**Mahar**: (Central provinces) The population in 1911 in C.P. 1,200, 000. The principal occupation of the Maharas are weaving of coarse country cloth and general labour. They formerly spun their own yarn and their fabrics were preferred by the cultivators for their durability. But practically all thread is now bought from the mills and the weaving industry is also in a depressed condition.¹⁷
**Koshthi**: (Central provinces). The occupation of the caste is weaving of the fine silk-bordered cloths. He cannot adopt himself to changed environment and clings to his loom. He dislikes rough manual labour, it is said that delicacy of touch needer in weaving the finer cloth.  

The pressure upon weavers to desert their vocation extended to other castes concerned with the processing of cotton. First of all carders or Dhunia’s, were forced to supplement their main profession.

The primary business of the Dhunia is the carding or rather scotching of cotton. The Dhunia also keeps a small shop where he sells threads and various articles such as bangles, forehead spangles and similar things. Another trade which he often follows is the making of the little charcoal tablets used for lighting the tobacco in the huqqa.  

India’s dyes applied to cotton cloth had been world famous. But by the close of the 19th century dyers pursued a decaying profession.

**Rangrez (U.P.)**: Population in U.P. in 1891 is 35,143. Their trade was in dyeing cloth. Due to foreign competition the trade has become much reduced in recent years and many of them have taken to agriculture and petty shop-keeping. Some of the dyer castes seems to have been affected so that they changed their original occupation.

From textiles it pass on to another crafts. First of all blacksmiths faced with the imports of British iron and iron goods.
Lohiya : (N.W.P.) : Population in 1891 : 592,114. Their main occupation is iron goods making. Though they now add to this other forms of trade and even agriculture.21

Agariya : Found only hilly parts of Mirzapur, U.P., Agriya confined to mining and smelting iron. In some cases the Agriyas continued in the vocation but helplessness of competition from imported iron forced them to look beyond.22

The same story is repeated for other artisan castes.

Teli (U.P.) : Population in U.P. 9,34,031 in 1891). Their special business is the manufacture of oil. But extension of the use of foreign mineral oils must have seriously affected their business.23

Polisher or Saiqalgar (U.P.) : (Population in U.P. 4,150 in 1881). The caste of polishers of metals. Since the disarming of the country the trade has become depressed.24

Churihar : A maker of glass bangles another name for the caste is Manihar. Their primary occupation is making glass bangles. Many have taking to agriculture.25

Basket makers (U.P.) : Their main occupation is making and selling of fans, baskets, boxes. A few of them have taken to agriculture.26

Besides, the artisanal castes another class that seems to have been greatly affected and forced to change traditional occupation that of carriers of goods. The introduction of railways in the second half of the 19th century
greatly interfered with the traditional modes of transport in India and diverted large numbers of people of their occupations.

**Mallah or boatman (U.P.)**: Population in U.P. in 1891: 369,008. The main occupation of the caste is managing boats and fishing. Since the introduction of the railways system has reduced river traffic.27

**Kewat (U.P.)**: A caste of fisherman, boatman and cultivators.

**Kadhera (U.P.)**: Population in 1891 census 51,753. Their main occupation of proper trade of boatmen.28

**Tiyar (U.P.)**: A Dravidan boating and fishing tribe in Eastern districts sometimes as sub-class of Mallah. At present they have nothing more than a right occupations.29

**Muriya (U.P.)**: This caste is sub-caste of Mallah. Those in Bhagalpur who have taken to cultivation.30

**Banjaras (U.P.)**: Their main occupation is to act as grain carriers and suppliers to armies in the field. One of the most important trades carried on in the present day by the Banjaras is that of the purchase and sale of cattle used for agriculture purposes.31

Since in most cases the artisanal caste live in towns and townships, their transformation into ryots (Peasants) and day labourers necessary meant a process of de-urbanization. This could have been countered by the emergence of modern industry but this cause slowly with a very limited scope of employment. Thorner makes an obvious slip while he compares the Indian experience with other industrializing countries by saying that this falling-off (handicrafts) was not a phenomenon peculiar to India but a world
wide development affecting different countries at different times. It is true that as he says “ruin of the old style craftsmen was an integral part of the industrial Revolution”. But what he forgets is that no industrial Revolution occurred in 19th century north India.

**POPULATION ESTIMATE**

If we can infer a pressure towards de-urbanization from de-industrialization, it is legitimate to ask whether data on the size of urban population supports such inference. Owing to lack of census data on an all-India basis before 1872 we can only take up data for certain regions. We have to be satisfied with estimates only and not on head or house counts.

**Table 1**

<table>
<thead>
<tr>
<th>Towns</th>
<th>Years/Period</th>
<th>Population in 1871</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patna</td>
<td>1812</td>
<td>312,000</td>
</tr>
<tr>
<td>Chapra</td>
<td>1811</td>
<td>43,500</td>
</tr>
<tr>
<td>Monger</td>
<td>1811</td>
<td>30,000</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>1811</td>
<td>27,500</td>
</tr>
<tr>
<td>Arah</td>
<td>1812</td>
<td>11,400</td>
</tr>
<tr>
<td>Bihar</td>
<td>1811</td>
<td>30,000</td>
</tr>
<tr>
<td>Purneah</td>
<td>1811</td>
<td>32,100</td>
</tr>
<tr>
<td>Dacca</td>
<td>1800 &amp; 1823</td>
<td>250,000</td>
</tr>
<tr>
<td>Murshidabad</td>
<td>1811</td>
<td>165,000</td>
</tr>
<tr>
<td>Bardwan</td>
<td>1814</td>
<td>53,927</td>
</tr>
<tr>
<td>Calcutta</td>
<td>1822</td>
<td>179,917</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>1,144,351</td>
</tr>
</tbody>
</table>

998,604
I offer above a comparison of the population of eleven big towns of Bengal and Bihar between years of the second decade of the 19th century and 1872.\(^3^3\)

Despite the including of British India’s capital, Calcutta was fast growing during the 19th century the population of these eleven towns on the whole shows a district trend of decline. A fall of about 13% in absolute total size of population over sixty years.

For five districts of southern Awadh, we are given estimates in Donald Butter’s Survey of 1838 when Awadh was yet a princily state (being annexed by the British in 1856).\(^3^4\)

Table II below gives a comparison of number of towns and their population in these five districts in 1838 and 1871.

<table>
<thead>
<tr>
<th>Districts</th>
<th>1838</th>
<th>1871</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of towns and 5000 and above</td>
<td>Total population of towns</td>
</tr>
<tr>
<td></td>
<td>No. of towns of 4500 and above</td>
<td>Total population of towns</td>
</tr>
<tr>
<td>Unnao</td>
<td>9</td>
<td>103,000</td>
</tr>
<tr>
<td>Rai Bareili</td>
<td>13</td>
<td>96,000</td>
</tr>
<tr>
<td>Sultanpur</td>
<td>5</td>
<td>39,000</td>
</tr>
<tr>
<td>Pratapgarh</td>
<td>11</td>
<td>103,000</td>
</tr>
<tr>
<td>Faizabad</td>
<td>5</td>
<td>134,000</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>475,000</td>
</tr>
</tbody>
</table>
A number of towns (of 5000 and above) declined from 43 in 1838 to 14 in 1871 and total population of these towns declined from 475,000 in 1838 to 134,643 in 1871, that is to less than one third of 1838. Lucknow the capital of Awadh suffered even worse than these towns. From estimated size of half a million in 1799\textsuperscript{35} it had risen by 1858 to a million.\textsuperscript{36} By 1881 census its population was only 261,303 that is a little over one-fourth of 1858.

**ESTIMATES OF THE POPULATION DEPENDENT ON INDUSTRY**

For obtaining the number of people dependent on industry we have relied on the detailed tables of the numbers of common artist, supplemented by their description in the text of Francis Buchanan’s reports, rather than on the numbers of artificers or artisans in the general population tables. These latter figures were obviously approximate and cannot be taken to be very precise. But Francis Buchanan took great pains to ascertain the numbers of artisans and traders in all the important towns or hats. His procedure was to directly enumerate the numbers of petty dealers, merchant and artificer in every important town, hat or large village, he passed through and put down these numbers under each thana in the index to the map of each district.\textsuperscript{37} Further as regards the most important groups of artisans viz. weavers and spinners in cotton and silk, Buchanan went to trouble in getting their numbers right by comparing the results of direct enumeration with indirect estimates from figures of production and the district imports and exports of the output.
There are major inconsistencies between the numbers of common artist thus arrived and the number of artificers given in the general population tables. One important source of discrepancy was that when it came to stratifying the general population, Buchanan did not stick to an occupational grouping but shifted to a class categorization. His gentry must have included vast numbers of spinning women who worked at home and also owners of factories or other artisans who were regarded as gentle folk.

In order to arrive at the number of artisans proper, the figures for ‘personal artist’ or people who rendered personal service and did not produce commodities were deducted from the total numbers of artist. Thus painters, dancers, barbers, singers, butchers were excluded. In general shops were also excluded but in some cases for instance ‘distillers shops’ in case of the Patna-Gaya report it was clear that the manufacturing establishment and their number was included.\(^{38}\)

### Table III

<table>
<thead>
<tr>
<th>District</th>
<th>Total population</th>
<th>No. of spinners</th>
<th>No. of industrial workers or artisans other than spinners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patna-Gaya</td>
<td>3,364,420</td>
<td>330,396</td>
<td>65,031</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>2,019,900</td>
<td>168,975</td>
<td>23,403</td>
</tr>
<tr>
<td>Purnea</td>
<td>2,904,380</td>
<td>287,000</td>
<td>60,172</td>
</tr>
<tr>
<td>Shahabad</td>
<td>1,419,520</td>
<td>159,500*</td>
<td>25,557</td>
</tr>
<tr>
<td>Total</td>
<td>9,707,020</td>
<td>945,871</td>
<td>174,164</td>
</tr>
</tbody>
</table>

\(^{*}\)Francis Buchanan does not include the number of spinners in the table of the number of common artisans for Shahabad. The figure has been taken from the text.
Table III shows that the total population and the numbers engaged in spinning and in other industrial occupations according to Francis Buchanan’s survey after the adjustments indicated in above paragraph.

Since spinners had generally lower earning than other artisans and often upper-caste women whose families did not depend solely on their earnings. In arriving at the total number of persons dependent on secondary industry we made two alternative assumptions about the earning status of spinners. Assumption(a) was that an average spinner supported one other person besides himself or herself, assumption (b) was that every spinner supported himself or herself only.

Regarding the other, we assumed that an industrial worker supported an average-sized family. It might be argued that in a society where production was mostly carried on at home since a worker would generally be assisted by other members of his family. This is not affect the validity of our estimates unless it could be shown that the numbers of these other members are already included in the total number of artist enumerated by Francis Buchanan. As far as weavers are concerned, Buchanan enters only the numbers of their houses or their homes in the tables for numbers of artists. Similarly in case of oil-pressures he enters only the numbers of their houses or mills in the statistical tables. The number of houses of weavers or oilmen were smaller than the numbers of looms or mills respectively. In summarizing Francis Buchanan’s tables, Montgomery Martin does not reproduce the number of looms or mills but he reproduce the number of houses of weavers or oilmen.
In case of paper-makers Buchanan gives the number of their houses in the text and in the tables.\textsuperscript{41} In Shahabad there were Kasis-makers\textsuperscript{42} and every kasis furnace employed several adult persons but we have included the number of furnaces alone. In case of Saltpetre manufacture in Patna-Gaya district Buchanan gives only the number of furnaces for making nitre.\textsuperscript{43}

The Modal and Mean family sizes in Purnea, Patna-Gaya and Shahabad were calculate from Montgomery Martin’s summaries and given in table IV. The relevant data for Bhagalpur were not available from these sources.

**Table IV**

<table>
<thead>
<tr>
<th>Family Size</th>
<th>Mode</th>
<th>Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patna-Gaya</td>
<td>5</td>
<td>5.9</td>
</tr>
<tr>
<td>Purnea</td>
<td>6</td>
<td>6.8</td>
</tr>
<tr>
<td>Shahabad</td>
<td>5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

*The class limits were variable in case of different size – classes of families. In calculating the mean, the arithmetic mean of the class limits was taken for weighing the number of families belonging to a particular size class. A geometric mean in some respects be superior but the variation of geometric from the arithmetic mean is unlikely to be large.*
Table V

Industrial Population in Selected Bihar Districts Around 1809-13

<table>
<thead>
<tr>
<th>District</th>
<th>Absolute no. of the population dependent on industry</th>
<th>Percentage of the industrial to total population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assumption (a)</td>
<td>Assumption (b)</td>
</tr>
<tr>
<td>Patna-Gaya</td>
<td>985,947</td>
<td>655,551</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>454,965</td>
<td>286,080</td>
</tr>
<tr>
<td>Purnea</td>
<td>874,860</td>
<td>587,860</td>
</tr>
<tr>
<td>Shahabad</td>
<td>446,775</td>
<td>287,285</td>
</tr>
<tr>
<td>Total</td>
<td>2,762,457</td>
<td>1,806,776</td>
</tr>
</tbody>
</table>

Table V gives the estimates of the population dependent on industry on the assumption (a) that every spinner supports one person besides himself/herself and on the assumption (b) that every spinners supports only himself/herself.

We have assess the effect of a century of British rule on the proportion of population engaged in secondary industry in the districts which were surveyed by Francis Buchanan. We choose Patna-Gaya, Shahabad, Monger, Bhagalpur and Purnea because these districts were almost wholly included in the area surveyed by Buchanan.

We take the choice of 1901 census years in some respects arbitrary. The choice lay between the census years of 1881, 1891, 1901 and 1911. A comparison with data of 1911 would have nicely covered a century of Buchanan survey. In census of 1901 occupation were more carefully
designated than before the criterion being whether a person actually derived his income mainly from the occupation shown against his name. There were in many cases as E.A. Gait, the superintendent of census operation, Bengal put it: 'So far as village occupations are concerned their most characteristic feature is that the same person both makes and sells. For example, the confectioner makes his sweets and sell them; the potter retails his earthen vessel which he moulds; the person who makes bangles is the same as the person who sells them and the fisherman usually himself sells the fish which catches. The principle which I followed was to class as 'makers' all persons who were entered in the schedules either as making or as both making and selling and to show as 'sellers' only those who were entered merely as selling it.44

Gait view regarding this I have thereby under-estimated the industrial population. But in the first place I left the numbers in other classes within the general occupation of industry intact and thereby many pure sellers in other categories were included. In the second place many of the 'makers and sellers' must have been primarily sellers and third place many of actual cultivators still retained their caste occupations which were non-agricultural as their actual occupations, thus inflating the number of people engaged in industry. Gait says that “in spite of European competition, cotton cleanliness, spinners and weavers still number about a million, but with people such as these the traditional occupation dies hard and many of the so called weavers are in reality mainly cultivators”.45
Table VI below gives both raw census figures and the adjusted figures of the population dependent on industry in 1901 for the Bihar districts which were covered by Buchanan survey.

Table VI

Population Dependent on Industry in 1901 in selected Bihar Districts

<table>
<thead>
<tr>
<th>District</th>
<th>Total Population</th>
<th>Industrial population</th>
<th>Percentage of Industrial to total population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unadjusted</td>
<td>Adjusted</td>
</tr>
<tr>
<td>Patna</td>
<td>1,624,985</td>
<td>279,093</td>
<td>179,695</td>
</tr>
<tr>
<td>Gaya</td>
<td>2,059,933</td>
<td>287,732</td>
<td>187,016</td>
</tr>
<tr>
<td>Shahabad</td>
<td>1,962,696</td>
<td>346,400</td>
<td>228,051</td>
</tr>
<tr>
<td>Monger</td>
<td>2,068,804</td>
<td>281,325</td>
<td>155,439</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>2,088,953</td>
<td>222,796</td>
<td>115,618</td>
</tr>
<tr>
<td>Purnea</td>
<td>1,874,794</td>
<td>220,506</td>
<td>121,933</td>
</tr>
<tr>
<td>Total</td>
<td>11,680,165</td>
<td>1,638,662</td>
<td>987,752</td>
</tr>
</tbody>
</table>

Source: Census of India, 1901 VI, VI A, VI B, Bengal Parts I, II and III, Calcutta, 1902.

A comparison of Tables V and VI shows that even the more conservative estimate (by assumption b) of the population of industrial to total population in Buchanan's time is larger than the most inflated estimate (the unadjusted census estimated) of the same magnitude in 1901. Taking the more conservative estimate of the proportion of industrial to total population around 1809-13 and comparing it with the more realistic (adjusted census) estimated of the same magnitude in 1901 we find that the
weight of industry in the livelihood pattern of the people was more than
double at the earlier date. It has been claimed that the district south of the
Ganges in Bihar had a larger development of industry than those north of the
river because at the time of the dissolution of the Mughal Empire, many
muslim nobles settled in these district bringing with them a large number of
artisans and a basically urban pattern of living.\textsuperscript{46} Perhaps this might explain
the surprisingly large development of industry in the districts surveyed by
Buchanan in his time. There is no reason to believe that the artisans
dispersed to other neighbouring district and set up their manufactures there.
We find that the unadjusted 1901 census figures showing the weight of
industry in the total population in the districts of Saran, Champaran,
Muzaffarpur, Darbhanga was lower than the corresponding figures for the
districts covered by Buchanan. It is possible that these north Bihar districts
had been more rural in Buchanan’s time.

The destruction of the handloom industry played a considerable part
in de-industrialisation process. Table VII below shows the absolute numbers
of cotton weavers, spinners and weight of population dependent on weaving
and spinning in the total industrial population.
Table VII

Industrial Population Dependent on Cotton Weaving and Spinning 1809-13

<table>
<thead>
<tr>
<th>District</th>
<th>Number of cotton</th>
<th>Total no. dependent on cotton weaving and spinning</th>
<th>Percentage of (3) to total Industrial population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weavers</td>
<td>Spinners</td>
<td></td>
</tr>
<tr>
<td>Patna-Gaya</td>
<td>19,900</td>
<td>330,396</td>
<td>379,896</td>
</tr>
<tr>
<td>Shahabad</td>
<td>7,025</td>
<td>159,500</td>
<td>194,625</td>
</tr>
<tr>
<td>Purnea</td>
<td>13,555</td>
<td>287,000</td>
<td>354,775</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>6,212</td>
<td>168,975</td>
<td>200,035</td>
</tr>
<tr>
<td>Total</td>
<td>46,692</td>
<td>945,871</td>
<td>1,124,331</td>
</tr>
</tbody>
</table>

Note: Assumption b of the total V was used for estimating the population dependent on Industry and Cotton weaving and spinning.

Table VII give the idea of the number of people engaged in cotton weaving and cotton spinning alone, for many of the spinners must have been engaged in spinning thread for silk or mixed cotton- and silk cloth. But there is no way of separating them from the rest. It seems to be clear that about 60% of the industrial population was engaged in the spinning of cotton yarn and weaving of cotton cloth.
Table VIII

Relative Weight of the Cotton Industry in Total Industrial Population in Selected Bihar Districts, 1901

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Persons Dependent on spinning of Cotton yarn and Weaving of Cotton cloth</th>
<th>Percentage of (1) to total adjusted Industrial Population of 1901</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Patna</td>
<td>22,318</td>
<td>12.4</td>
</tr>
<tr>
<td>Gaya</td>
<td>41,836</td>
<td>22.4</td>
</tr>
<tr>
<td>Shahabad</td>
<td>25,258</td>
<td>11.1</td>
</tr>
<tr>
<td>Monghyr</td>
<td>23,493</td>
<td>15.1</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>19,034</td>
<td>16.5</td>
</tr>
<tr>
<td>Purnea</td>
<td>16,777</td>
<td>13.8</td>
</tr>
<tr>
<td>Total</td>
<td>148,716</td>
<td>15.1</td>
</tr>
</tbody>
</table>

*Source: Census of India, 1901, vol. VIA, Bengal Part II, Tables, Calcutta, 1902*

The figures of Table VII and Table VIII are not exactly comparable. It seems to be clear that both the absolute numbers of persons dependent on the cotton industry and the relative weight of the cotton industry in the secondary sector declined. Thus the main factor behind the de-industrialisation process was the decline of the handloom and hand spinning industries. But it was not only the handloom industry that was involved in this cataclysm, many other traditional industries also suffered and decline in their output and employment.
Table IX

Scale of the Indian Textile Industry 1920 and 1940

<table>
<thead>
<tr>
<th></th>
<th>1920</th>
<th>1940</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Handloom Industry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers</td>
<td>24,07,300$^1$</td>
<td>-</td>
</tr>
<tr>
<td>Looms</td>
<td>20,25,000$^2$</td>
<td>21,93,262</td>
</tr>
<tr>
<td>Cotton looms</td>
<td>N.A.</td>
<td>14,17,200</td>
</tr>
<tr>
<td>Idle looms</td>
<td>N.A.</td>
<td>2,65,464</td>
</tr>
<tr>
<td>Production (million yards of cotton cloth)</td>
<td>931</td>
<td>1,703</td>
</tr>
<tr>
<td>% of domestic consumption of cotton cloth</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td><strong>Mill Industry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers</td>
<td>3,32,200</td>
<td>6,25,000$^3$</td>
</tr>
<tr>
<td>Looms</td>
<td>1,17,558</td>
<td>1,99,000$^3$</td>
</tr>
<tr>
<td>Production (million yards of cotton cloth)</td>
<td>1,529</td>
<td>3,737</td>
</tr>
<tr>
<td>% of domestic consumption of cotton cloth</td>
<td>44</td>
<td>62</td>
</tr>
</tbody>
</table>

1. Census estimate of ‘actual workers’

2. there was a handloom census in 1921, which did not cover several major states and provinces. The 1940 estimate is more comprehensive. We multiply the 1940 loomage with the 1920: 1940 ratio of looms in regions covered in both years to derive an estimate for 1920.

3. Refers to 1943

Source: India Fact-Finding Committee (Handlooms and Mills), Delhi, 1942, Ch. 2.

Table shows that at the end of world war I, two-and-a-half million handloom weavers were in business. The total employment in industries connected with hand-weaving was possibly about three million or more. This figure represented 20% of industrial employment. Handloom weaving
was by far the largest industry in India. Handlooms accounted for about 25% of the cotton cloth produced annually in the first half of the twentieth century. The markets for artisanal and mill-made textiles were segmented to a large extent. But the figures suggest that not only was there survival, but in the early twentieth century, the weaving industry was expanding in output and labour productivity. Output per loom nearly doubled between 1920 and 1940. The growth was no means a smooth one. It was violently disrupted by World War I, which created an acute scarcity of yarn and imposed an inflation tax on buyers of cloth, and by the Great Depression, which depressed rural demand.

Table X

Employment in Leather, 1901-1931\(^\text{a}\)

<table>
<thead>
<tr>
<th>Actual Workers in leather :</th>
<th>Number of male workers (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1901</td>
</tr>
<tr>
<td>Bengal</td>
<td>71</td>
</tr>
<tr>
<td>United Provinces</td>
<td>-</td>
</tr>
<tr>
<td>Punjab</td>
<td>215</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual workers in leather from Leather castes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengal</td>
</tr>
<tr>
<td>United Provinces</td>
</tr>
<tr>
<td>Punjab</td>
</tr>
<tr>
<td>1901</td>
</tr>
<tr>
<td>1911</td>
</tr>
<tr>
<td>1921</td>
</tr>
<tr>
<td>1931(^b)</td>
</tr>
</tbody>
</table>

Proportion of actual workers following traditional occupation (%):

<table>
<thead>
<tr>
<th>Bengal: Chamar and Mochi</th>
<th>25</th>
<th>32</th>
<th>27</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Provinces: Chamar</td>
<td>6</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Punjab: Chamar</td>
<td>-</td>
<td>36</td>
<td>35</td>
<td>26</td>
</tr>
<tr>
<td>Punjab: Mochi</td>
<td>-</td>
<td>66</td>
<td>73</td>
<td>72</td>
</tr>
</tbody>
</table>
Notes: 

a In the census, ‘tanning’ is defined as a separate order under the general class ‘exploitation of materials’, but leather products are variously classified by usage. The most important usage is footwear, classified under articles of clothing. We have considered only this item which implies exclusion of minor products like leather containers.

b 1931 data refer to earner with principal occupation as leather.

Source: Census of India, 1901, 1911, 1931 India Vol. I Part II (Tables), Calcutta and Delhi, 1902, 1912, 1933 and Part II (Tables) of corresponding volumes on the major provinces.

Table shows that in northern India ‘actual workers’ employed in leather did not decline over 1901-31, though employment may have been stagnant. But participation in tanning by castes identified with leather definitely reduced.

In sixteenth century, carpet became an important item of trade, and evolved into a popular consumer good in Europe. In interior decoration, the nineteenth century in Europe was positively ‘the age of the tapissier’. For few other decorated objects individualized living rooms as effectively as carpets did. Carpets were the orientalist symbol par excellence. And the process had profound implications for the makers and sellers of carpets in the regions from where they continued to be exported to Europe and gradually to America.

Mirzapur, Banaras, Agra, Patna and Gaya were major centre of carpet industry in 19th century in north India. Mirzapur area is significant in the history of carpet for two reasons. First, it is the only major example of rural industrialization. Secondly, it is an example of a successful market adaptation in which a former luxury learnt, by skillfully degrading itself. These conditions led to a very rapid expansion of weaving in the Mirzapur area in recent times. It seems that the area had about 3,500 workers in 1907,
9-10,000 about 1920 and the majority of the 20,000 workers in the entire province in the 1930s.49

Table XI

Export of carpets and rugs by Sea from India, 1901-1938

<table>
<thead>
<tr>
<th>Years</th>
<th>Quantity (million lbs)</th>
<th>Value (million Rs.)</th>
<th>Average annual changes in prices (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Annual average</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1901-5</td>
<td>-</td>
<td>-</td>
<td>12.2</td>
</tr>
<tr>
<td>1906-10</td>
<td>-</td>
<td>-</td>
<td>12.4</td>
</tr>
<tr>
<td>1911-15</td>
<td>-</td>
<td>-</td>
<td>11.9</td>
</tr>
<tr>
<td>1916-20</td>
<td>-</td>
<td>-</td>
<td>21.7</td>
</tr>
<tr>
<td>1921-25</td>
<td>20.8</td>
<td>4.2</td>
<td>43.7</td>
</tr>
<tr>
<td>1926-30</td>
<td>23.0</td>
<td>4.6</td>
<td>41.0</td>
</tr>
<tr>
<td>1931-35</td>
<td>43.9</td>
<td>8.8</td>
<td>36.3</td>
</tr>
<tr>
<td>1935-38</td>
<td>29.9</td>
<td>10.0</td>
<td>27.0</td>
</tr>
</tbody>
</table>

Notes: The value figures for 1901-5 to 1921-5 include export of woolen manufactures. In the data after 1920, this item constituted about 5 per cent of combined carpet and woolen export. The prices are weighted agricultural prices.


Table XI shows that for the first twenty years in this time series figures for the quantity of export are not available. Nor do we have figures for carpet prices as such. A rough idea about changes in volume can be formed by comparing the values with the movement in general prices. Such
a comparison suggests that, until the middle of the first world war, the trade was stagnant in volume, but thereafter, the expansion in volume was dramatic. Between 1916-20 and 1935-8, the average annual volume of carpet exports, according to this calculation, might have increased four or five times.

Thus we can say that in nineteenth century carpets industries suffered a decline in quality and in scale thanks to hybrid designs and bad dyes. But in 20th century it was developed in north India.
NOTES AND REFERENCES


6. Large part of the 19th century the Indian tribute was realized through the forced export of opium to China. By 1831-40 India was exporting an average of 24,335 chests (of 149 lbs each) of opium annually, each value at pound 464 (Tan Chung, *Triton and Bragon-Studies on Nineteenth Century and Imperialism*, Delhi, 1986, pp. 30-31). In 1855 India exported to China opium worth of £ 6.23 million (R.C. Dutt, *Economic History of India in Victorian Age*, p. 162). Between 1850-55 total Indian exports to China were valued at £ 23.5 million and imports from China to £ 9.0 million a net loss of £ 14.5 million. Britain imported from China £ 41.9 million worth of goods while its exports amount to £ 10.2 million during the same period that is a gain

After the construction of railways and the opening of the Suez Canal wheat and rice exports picked up and during the last two decades of the century India began to export 2.2 million tons of wheat and rice annually besides cotton and oilseeds. (M.B. McAlpin, Subject to Famine, Princeton, 1983, p. 203).


But D. Kumar disagree with Patel view and shows an increase in the number of agricultural labourers from 15 or 17% to 27 or 29% of the rural population in South India during the 19th century (Land and Caste in South India, Cambridge, 1965, pp. 168-82).


12. Thurston (p. 252) records of the Devangas, a weaver caste (South India) that 'they laughingly said that though they are professional weavers, they find it cheapest to wear cloth of European manufactures.


39. See for example, Buchanan, An Account of the District of Bihar as 782 and the number of their looms as 1622 and finally the number of houses of oilmakers or telis as 5132 and the total number of oil mills as 5466, the number of houses of weavers who work in tasar silk as 782 and the number of their looms as 1622 and finally the number of houses of weavers of cotton cloth as 19,900 and the number of their looms as 24,352.
40. See for example, Martin Montgomery: *History, Antiquities, Topography and Statistics of Eastern India*, London, 1838, vol. II, Appendix of Statistical Tables, Book I, Bhagalpur, Table K, where the numbers of weavers who work in tasar and silk and of weavers of cotton cloth were given as 1138 and 6212 respectively. From the text of Buchanan: *An Account of the District of Bhagalpur in 1810-11*, pp. 612 and 616, we find that the number of tasar silk looms was 3275, the number of houses of weavers of cotton cloth was 6212 and their looms numbered 7279.

41. In Martin Montgomery: *op.cit.* I, p. 56 of the Statistical Tables, the number of Paper makers in Shahabad is given as 60. In the text of Buchanan: *An Account of the District of Shahabad in 1812-13*, Patna, 1934, pp. 398-99, we read: “in Sahar opposite to Arwal 60 beaters belonging to 40 houses were acknowledged; and 30 beaters in 20 houses are admitted to be in the Baraong division...”. This shows that Buchanan took the number of houses and not that of beaters.

42. See Martin: *op.cit.*, I, p. 56 of the Statistical Tables, Kasis was an impure sulphate of iron used as medicine and by tanners and calico printers. Each furnace had managers two partners, who were bound to merchants by advances. See Buchanan: *Shahabad*, pp. 416-18.

43. Buchanan: *Bihar and Patna*, vol. II, p. 773. Every furnace was worked by a whole family.


Chapter – V

SOCIO-ECONOMIC STATUS OF THE ARTISANS AND CRAFTSMEN

Artisans, still constituting an important segment of Indian society, represent the single largest element of continuity of the Lokavidya or the living traditions of sciences and technologies. The continuity has been attributed to the survival of subsistence households of simple commodity producers, surviving by dint of superhuman exploitation of family labour and undergoing continuous immiserisation. The artisan as practitioner of Lokavidya, therefore, has been the tragic hero fighting his lone battle against the machine industry.

The artisan constituting an organic element of Indian society had extremely important role in its transition. Even in these days of globalisation and open market their relevance to the south Asian economy could hardly be denied.²

Position of Artisans in Indian History

The question of artisanal tool technique in India has been an important subject in understanding the development of indigenous technology and its role in the historical process of social transition in South Asia. Unfortunately, however, the subject has been only inadequately studied and the neglect of artisan as a subject in the present day Indian historiography.

The point is does India’s handicraft sector really deserve this neglect. The available estimates, although inadequate clearly suggest a bigger role
for the Indian handicrafts both in terms of employment and output. In 1750, India perhaps supplied a quarter of world production of manufactured goods while in the greater part of the nineteenth century the manufacturing activity remained largely confined to handicrafts. In 1901, the large-scale industrial sector in India, including mining and small-scale industries, thus appears to have employed a little over four per cent of the country’s manufacturing workforce, rising to nineteen in 1947. In 1931 for instance large-scale industries employed much less than one per cent (0.42%) of India total population, while its contribution to the total income from the secondary sector in terms of 1938-39 prices increased from 19 to 53 per cent only between 1901 and 1947. Even in 1947, therefore eighty per cent of the workforce connected with the manufacturing activity were employed in the handicraft sector, indicating the importance of its role in determining the structure of Indian economy throughout this period.

Studies on Indian artisanal production have largely based on de-industrialisation. Deep-seated into the consciousness of Indian historiography, the debate on de-industrialisation had its origin in mid-nineteenth century disillusionment with British rule in India. The early decades of the nineteenth century had witnessed the emergence of new manufacturing units like for Gloster, flour/sugar and rice mills or the steamers sailing down the Ganges before the wonder-struck eyes of its innumerable bathers along their routes from Calcutta to Patna. All these had created a notion of an imminent industrial Revolution in India. Yet the real situation was nowhere near this expectation.
It was this statement, analysed in the light of Marx’s oft repeated comment about the impact of British steam and science on Indian economy, which had eventually crystallized into an ideological construct of colonial disruption. That free import of English manufacture into India would ultimately lead to reruralisation of the Indian economy by destroying its own industrial structure. The nationalist leaders eventually made it the main plank of their argument against British rule in India. The imperial protagonist of the raj naturally took up the defence Counsel. Since the issue of de-industrialisation has been variously used by its exponents to explain the backward condition of Indian economy, making it almost the legion of Indian economic history.

This debate as such is not important for our discussion, nor does it want a resolution on the all important question connected with this debate as to how far British rule was responsible for undermining the existing structure of the Indian economy. The debate has been referred to here only to draw attention to the fact, this long-drawn debate involving a number of internationally known historians has failed to extend the frontiers of our knowledge regarding the Indian artisans, yet the question of Indian artisan lay at the centre of this debate. One of the important reasons of this failure was the pre-occupation of the concerned historians with the micro-economic issues and their failure to enter the actual domain of the working artisans. In reality, different objectivity, the use of the same kind of source materials by historian both supporting and opposing the argument of de-industrialisation and particular research methodology used to support their pre-conceived
conclusions mainly stood in their way of looking at the small domain of the Indian artisan.

Apart from de-industrialisation, the question of artisan has also surfaced in the discussion of the Indian village society of which the artisan naturally formed an inalienable part. Historians and social anthropologist have variously tried to define the village society’s relationship with the artisan yielding a very good crop of literature on the subject. Nevertheless, this discussion has largely concentrated on the mode of payment the village artisans used to receive in return of their services to the village society.

SOCIAL STATUS OF ARTISANS

In the old economic structure of India the position of the country artisan was definitely fixed. Urban handicrafts, though greatly advanced in industrial organization were numerically unimportant. Thus in old north India the country artisan was numerically by far the most important industrial worker. With the passage of years this dominant position of the artisan has been lost but even today (1924) the large bulk of the industrial population of India is formed of country artisans.

All artisans in the village have not a fixed position. There was one class of artisans who were village servants and another independent class. The following quotation brings out the difference in status of the two groups very clearly: 'In a villager there was a very wide distinction between the village menial and the independent artisans. The carpenter, the blacksmith, the potter, the scavenger in villages where women are secluded, the washerman – all classes in fact whose services are required in husbandry or
daily domestic life – are paid not by the job but by customary dues consisting of a fixed share of the produce of the fields. And the service they are bound to perform is measured by kind not by quantity … Those artisans however whose services are only occasionally required such as the weaver, the oilman and the dyer are paid by the job, not usually indeed by cash but either in grain or by being allowed to retain a fixed share of the raw material which their employers provide for them to work upon'.¹⁰ This brings out clearly the difference in status between the two groups of artisans. But this difference in status in the village community did not necessarily mean a difference in economic position. The difference between two groups not so much in their economic condition as in the mode of payment and the times of payment for their services. There was an obvious advantage to the former group, in that their income was a fixed and a steady one, but it is doubtful how far this was a real advantage. It is true that in case of a failure of harvest the village weaver or dyer would get no order and would have to starve. But the case of the menial classes was not much better for the failure of a harvest would very considerably reduce their share of the produce. In fact the distinction between the two groups was made merely for the sake of convenience and the prosperity of all the village artisan dependent intimately on the prosperity of the cultivators.¹¹

While all the artisans were not included in the village servant group itself was not composed only of artisans. There was also a combination of occupation in some cases so that it was difficult to say that who was a pure artisan. Take the mahar of the Maratha region. His position was that of the
village watchman, as such he had perhaps a small plot of land but he mostly lived on the village dues and was one of the first recruits to the landless labour class. Yet over a large tracts the mahar was also a weaver of coarse cloth. The potter was a true artisans but because in many parts of the country his craft necessitated his keeping a donkey. He became the general carrier for the village. In spite of these difficulties three distinct groups can be made in the village population outside agriculturists pure and simple. The highest stratum among them socially and economically was composed of the priest and the accountant. Next came the artisan group comprising chiefly the blacksmith, the carpenter, the oilman, the weaver the potter and shoemaker. Lastly came village servants such as watchmen, scavengers who formed the unskilled labour class. They were mostly labourers though they occasionally combined this with occupations like coarse weaving, basket-making or mat making.

The changes which have come over this structure during 19th century do not have been enormous. Most of the old artisans today (20th century) are paid dues. The payment for the jobs today are still mostly in kind. The village today possess the some equipment of artisans as before. The change then whatever its nature or extent has not been revolutionary. But the direction of the change is definite. The tendency has not been towards the abolition of the dues and services outright, but the customary dues are now playing a much less important part in the income of the artisan than they used to. The same holds good as regards the plot of land that the hereditary artisan held. Its importance too, has diminished. Again the artisan has
become today more ready to migrate. All these are signs of a dissolution of the bonds which once held the community close together. The transition is not complete yet. Ease of communications also contributed to the process of at least a partial movement towards concentration of certain artisans in the larger villages and towns. For now that a commodity for whose supply the villager could afford to wait for the weekly market, could brought to the village from outside. The presence of artisan himself was not required on the spot.

There are two factors that governed this movement towards a partial concentration of artisans were (a) the orgency of the peasant’s requirement and (b) facility of carriage. On both these counts, the presence of the blacksmith and the carpenter was required in the village. Either of them might be required to repair an agricultural implements at any moment. The leather workers presence was especially necessary in those parts in which well-irrigation and leather buckets were common. Of all these artisan, the weaver was least required from this point of view. The demand for cloth could be put off for the time being, and the weavers products could also be easily carried from a distant market. Thus we find the weaver the first among the class of artisans who showed any signs of concentration in bigger centres. The dyer was in the same boat, in fact it was not uncommon for the weaver to be a dyer also.\textsuperscript{13}

Apart from this tendency towards concentration of artisans as a result of easier communication, there were two others which were bringing about a change in the above class of artisans. Both were manifest in all those cases
where the industry was in a depressed condition on account of foreign competition or other reasons. These tendencies of artisan, driven out of his occupation, to join the ranks of the day labourer or to migrate to towns in search of employment. The extent of this migration to town was however very limited. There were also many artisans, who as soon as they had slightly improved their position, gave up their hereditary occupation and took to agriculture.

The blacksmith and the carpenter may be considered first. There was a great similarity between these two groups of artisans and in many parts of India their occupation were interchangeable. They were both essential for agricultural implements. The work of the village blacksmith had always been reported to be crude and one of the difficulties in the introduction of improved implements had been his inability to repair them. The only articles other than agricultural implements that he made were certain articles of domestic use and tools for other artisans. The position of the village blacksmith was not much affected by any outside factors. He had never produced a great deal of original work and had chiefly confined himself to repairs. On the other hand the demand for the village blacksmith was not an increasing one either, whereas in the towns industries requiring the services of a blacksmith were increasing. For example, there was the development of cutlery trades in north India and the growth of engineering workshops and iron foundries almost all over north India. It is not clear whether there was any movement of the village blacksmith to the towns to satisfy this demand. But in any case it could not have been considerable. Whenever he did go to
the towns, he definitely improved his position. The blacksmith may be said to have been more or less in a stationary condition throughout the period, except the urban blacksmith who improved his position.\textsuperscript{15}

The carpenter held a similar position in the village community. But he did less repair and more original work than the blacksmith. Here his position became worse. The introduction of the iron cane-crushing press, for example, undermined very greatly his position in the sugarcane growing tracts. The same may be said of the introduction of the iron plough. But as this movement was not very general. The effect cannot have been widely felt. Wherever improved machinery was coming into use in agricultural operations. The position of the carpenter was becoming less secure. According to Bengal Census Report for 1901 puts carpenters among the class of rapidly decaying village artisans. If the village carpenter migrated to the towns, his chances were quite good. The general activity in the building traders in coach and carriage making and in the small furniture industries in the towns was creating quite a brisk demand for carpenters.\textsuperscript{16}

As far as dyer was concerned that it was to be found in all villages of a fair size. Dyeing according to the old Indian method involved very complicated process and the dyer had to possess a considerable degree of skill. The competition of foreign goods was in this case an important factor. Aniline dyes were introduced into India about 1870. They were at first of a very fleeting quality and greatly inferior to the Indian dyes. But they had two important advantages. They were cheap and they were very easy to use. Their spread in India was therefore rapid and by 1890 Indian dyes had
almost completely gone out of use. On this basis we can say that the social status of dyer was not good even in present century their status were remain unchanged.

The dyeing industry and its prosperity are very closely connected with the cotton handloom weaving industry. The handloom industry is the biggest and the most widely spread in India. At the same time cotton weaving is a good deal more localized than most other country industries. There are colonies of weavers in most towns and big villages of north India. Nevertheless there are usually weavers to be found in most villages also. Dr. Watson’s remarks on the commercial importance of the different products of the Indian loom are interesting. He says: ‘There are certain fabrics which will probably be best and most cheaply manufactured by hand ... the native looms will continue to yield the embroideries, the shawls the carpets for which they are already so famous’. But even more interesting are his remarks about the coarse cloths. ‘The thicker materials are more durable as well as warm; of their commercial importance as a class evidence is afforded by the fact that during the recent cotton famine in England and consequent rise in price of raw material the native goods retained their position more firmly than the English one did, though the price of the former rose to a greater extent than did the price of the European’.

Though the decline in the number of weavers in the later period was not considerable, it must have been very large when the competition started. The position of weavers also had perhaps worsened a little, though this was
not possible in any large degree because their position was already extremely bad at the beginning of the nineteenth century.

DIFFERENCE BETWEEN URBAN AND RURAL:

The social image of the city craftsmen was by and large determined by their belonging to the urban society with its peculiar types of lifestyle and culture. The basic difference between urban and rural crafts and the positions of urban and rural artisans is that – It was not at all by chance that in the north Indian languages the word ‘urban’ (nagar) was also used in the meaning of ‘smart, ‘exquisite’, ‘sophisticated’, ‘of high culture’, while the word ‘rural’ (gramina) signified ‘simple’, ‘rude’ we know that an urban craftsmen used more sophisticated tools and techniques, fulfilled a more exquisite work and what is more important for us now, enjoyed a more high social status than his rural counterpart. A village artisan was a servant of agriculturist, in many cases he had no access to the village temple or primary school, even the public well. On the contrary an urban craftsmen (especially a weaver, a cloth printer, an gunpowder) was a member of corporation, which sometimes was very influential in the city affairs, a respected master and householder, who worked independently for the market or to order. According to some sources, literally was rather widely spread among the towns folk, including craftsmen. The city schools run by the temples, mosques and private persons were attended by the children of merchants and craftsmen (the nobles children usually studied at home), in these school primary education in vernacular languages was imported. Thus
an urban craftsman differed from his village counterpart by a wider world outlook, literacy and perhaps feeling of self respect.

**RELATIONS OF PRODUCTION**

In major centres of cloth production such as Lucknow and Banaras or Mau and Mubarakpur (in Azamgarh district) the weavers and spinner faced violent fluctuations in the conditions of their trade in immediate pre-colonial as well as colonial period. A sharp increase in the demand for their goods and skills in early nineteenth century was followed by a progressive erosion of their markets. On result in the long term was a forced shift form the manufacture of fine cloths to that of coarser and cheaper varieties. The silk industry of Banaras stand out as a notable exception in this respect but even here new markets arose sometime after the collapse of the old and the weavers were not able easily to protect themselves from fluctuations in demand.\(^1\)

It was the quality cloth industry that was most directly affected by the competition from mill-made goods but the manufacture and trade of the coarse varieties of cloth were also subjected to powerful new pressures as distant economic forces came to bear on the economy of the countryside.\(^2\) Increased prices from the middle of the 19th century and growing (Indian and foreign) factory demand for raw cotton created new problems for the local artisans. Thus during the cotton famine of the early 1860s an enquiry into the slackness of demand for European cotton goods’ producing distressing reports of weaver condition from all over U.P. In Jaunpur the number of looms at work was down from 3012 to 1986 and weavers had
taken to the work of coolies, or servants or to begging. In Ghazipur brokers believed that whereas some 10,000 mounds of the cotton annually imported into the district was normally retained for production within the district. The figure was down to 5000 or 6000 maunds in 1863. Many of the Julahas of this district have of late migrated to the Mauritius and elsever. The collector reported, ‘and many others having abandoned their original occupation, have become bhistees, labourers, hawkers of cloth and beggars. In Allahabad the number of looms at work had declined from 10,000 in 1860 to 4000 in 1863. In a few of the pergunnahas where cotton is grown the diminution is comparatively small. In towns where the diminution was great the unemployed operatives may be seen seeking for service as Bhistees or coolies.23

During this time that the weavers of Mau told the Commissioner of Banaras that they would make cloth of the finest quality for him and it would be cheaper than coarser as the latter required more cotton thread.24 Their labour and skills had become an entirely subsidiary consideration as compared to the cost of the raw material. It was one striking indication of the weavers decline into new, semi-proletarian conditions.

The weavers of Lucknow have been ruined by the import of English goods. William Hoey wrote in 1880 that ‘The julahas of Lucknow are fast leaving the city... and seeking a livelihood in service’.25 East of Lucknow, the jamdani or figured muslin weaving of Tanda and other places in Faizabad district was also under severe pressure. The town of Tanda, perhaps the most important of the traditional cloth producing centres of
Awadh taken over by the British in 1856. In that year exported cloth valued at over Rs. 1.5 lacs to Nepal alone. By 1880 it was sending less than half that amount.

As far as the cotton cloth production of the major weaving centres in Azamgarh in the latter nineteenth century the most important cloth producing district in U.P. excluding Banaras, appears to have held up a little better. In 1890 the local industry was described as still moderately flourishing though to some extent on the decline. The opening of railway line through the district and through its major weaving town, Mau in 1898 occasioned some revival of trade-fewer weavers now left Mau. It was noted, to seek employment in the mills of Bombay, Cawnpore and Calcutta.

Grierson made a detailed study of the economic condition of the cultivators of Gaya in the 1880s, recording statistics of area, outturn, rent, cost of production of different crops and so on, for over 3500 holdings. One of the most remarkable facts about cultivation in Gaya, he wrote after the conclusion of his survey,

‘is that it does not, as a rule, pay for expenses .... If we exclude other sources in income, 70 percent of the holdings of the district do not support their cultivators.

Those of them who have sufficient clothing and two meals a day must in addition to cultivation, have other sources of livelihood’.

Grierson found that from a smaller survey that the most important were, first, cattle farming and then service, closely followed by artisanal work. It is striking that the income from service – as chaukidars, peons, domestic servants, workers in factories in the district of Gaya or further a
field – was already greater than that from artisanal industry. Grierson commented that the ‘Howrah mills’ are full of Gaya julahas.\(^{29}\)

Conditions in Gaya were not markedly different from those that obtained in adjoining district of bhojpuri region. In the latter nineteenth century large numbers of the urban and rural poor in these district – impoverished peasants and labourers, small zamindars and artisans turned to the only major avenue of alternative employment now left to them, migrating with their Gaya counterparts to the industrial belt around Calcutta, the tea gardens of Assam, and plantation abroad. An official report on Azamgarh noted that during the decade of the 1890s emigrants from the district had remitted an average of Rs. 13,00,000 per annum to their relatives at home.\(^{30}\)

**GUILD ORGANISATION**

With the growth of the crafts the organization of the craftsmen into guild probably came into existence. The words *vratas* and *ganas* are generally supposed to mean guilds or corporate unions in ancient times. During late medieval and as well as pre colonial period there were two types of guilds – the craft guild and the merchant guild. The former was a professional association based on the caste system. Each group of workman following a particular profession and belonging to a community formed a guild. Thus heredity formed a notable part in it, an artisan’s son was usually an artisan. But if a member of a community should exchange his profession and take to the profession of some other community then he became a member of the guild. Thus, as Sir George Birdwood\(^{31}\) remarks, “the trade
guilds of the great polytechnical sites of India are not, however, always exactly, coincident with the sectarian or technical caste of a particular class of artisans. Sometimes the same trade is pursued by men of different castes, and its guild generally includes every member of the trade it represents without strict reference to caste". Thus, though caste was great factor in the formation of guilds the sameness of occupation of the members was of equal importance.

Among the important crafts guilds of 19th century mention may be made of goldsmiths, blacksmiths, brass-smiths, carpenters, weavers, cloth dyers and few others. But so far as their organization is concerned we do not have sufficient information. The craft-guilds may not have been very effective in the early medieval period but late medieval or pre colonial period the guild were considered to be a powerful element in social stability.32

Guild organization in its traditional form is no longer existing in India. The interests of the craftsmen are now being looked after by the cooperative society formed, owned and operated by the craftsmen themselves. The co-operative societies are local bodies of the craftsmen which look after and promote their mutual interests. The cooperative societies generally undertake the following activities.33

(i) **Giving Technical Guidance to the Craftsmen**

The society gives technical guidance to the local craftsmen when they receive orders for processing articles from the society. The craftsmen get instructions from the society regarding the specifications of the designs but
this cannot be considered to be technical guidance in the real sense of the term. Hardly any craftsman comes to the society for receiving guidance about new technique of operation.

(ii) Providing Tools and Equipments and Workshop Facility:

The society provides tools and equipment and workshop facilities to the craftsmen. These facilities are utilized by the Craftsman only when they get orders from the society. Generally the society does not give on hire, tools and equipment to the craftsmen. So far as the workshop facilities are concerned, the society sometimes allows the needy craftsmen to use its workshop.

(iii) Giving Assistance by way of Finance and Raw Materials

Sometimes the society gives assistance by way of finance and raw materials to its members. It is to be noted that some members are given cash only or raw materials only.

(iv) Introducing the Craftsmen to the New Designs and Decorative Motifs supplied by the State Industries Department

The society introduces the craftsmen to the new designs and decorative motives supplied the state Industries Department. Sometimes the state Industries Department specifically ask the society to introduce some new designs and motifs, and the craftsmen are instructed by the society to adopt these designs and motifs.

(v) Providing Marketing Facilities
The society not only procures works for its members, but also provides marketing facilities for their finished products. The articles are either disposed of by its through the emporia of the state Industries Department or through its own shop. Sometimes the society disposes of the products either through Commission agents or through wholesale dealers who supply orders of the shops of the organized markets in the cities and towns.

It has been stated that the age-old guild organizations in their traditional forms are no longer existing in India. The role of the guild organizations in now more or less played by the Cooperative societies which exclusively look after the interests of the artisan communities.

LOCALISATION OF CRAFTS

Localisation is an important factor for the progress of crafts. It gives impetus to specialization and efficiency of labour and craftsmanship. Localization of crafts and industries appears to be a continuous process in the rural and urban economy of India. During colonial period the rural and urban crafts appears to have been flourished in particular villages or towns.\(^{34}\) The chief causes for this localization were the ancestral skill of the craftsmen, availability of raw material, marketing facilities and the state patronage. As for example, the five flowered brocade work was made at Banaras. Allahabad was manufactured of silk cloth of high class. In woollen industries Agra and Patna were famous in north India for high quality. In leather industry Agra and Kanpur were famous in high quality in north India.\(^{35}\) In Bidriware, Purnea district were most important centre in Bihar.
Bidri is a compound metal, and is prepared by members of the Kansari caste, who lives in Bellori a village situated about four miles from the civil station of Purnea.\(^{36}\)

So far as the localization of crafts in a particular street or locality of a town or city is concerned it may be noted that there are still many towns or cities in north India where localization of crafts is persisting in a particular street or locality. As for example in Darbhanga (Bihar) the potter’s craft is located in two localities of the town namely, Maulaganj and Hasan chak.\(^{37}\) In Banaras (Uttar Pradesh), it will be observed that the silk and brocade work is principally localized in the Adampura and Jaitpura wards to the north of the city, which constitute the chief residential area of the Muslim weavers. Elsewhere the craft is located in Madanpura, Nawabganj, the Reori Talao area and Lallapura all lying to the south-western part of the city.\(^{38}\) As regards toy industry it has been stated that the industry is localized in the Khojwa-Nawabganj area, Ramapura, Kashmiriganj, Nai Basti and Hanumanpura and employed about 500 workers.\(^{39}\)

The localization of crafts in a particular village or in a particular locality of a town or city has thus, played an important role in the economic life of the craftsmen who have retained even traditional prejudices which go against the betterment of their prospects.

**MOBILITY OF THE OCCUPATION**

The most important set of artisans involved in long distance migration were the Momins (also known as Ansaris or Julahas). The term Momin refer to a rather diverse set of people who were spread widely over northern India
but who shared their Islami faith and a traditional association with handloom weaving. In practice, Momins were dispersed over a fairly wide range of professions by the mid-nineteenth century. Involvement in agriculture was not uncommon though here again there was a significant degree of reluctance to work as agricultural labourers. Many muslim weaver took great pride in their artisanal skills and saw abandonment of the profession as a last resort. In some instance, Momin weavers preferred moving to other areas to become handloom weavers or mill workers as a superior alternative to the performance of unskilled agricultural or industrial labour.

By the late 19th century, a large number of Muslim weavers especially from eastern United Provinces had began to move to western India. Many of them concentrated in small towns in northern Maharashtra along the Agra-Bombay highway. Initially, they came on foot or by bullockcart but later train became the most common mode of migration.

The broader economic conditions facing handloom weavers in north India from the mid 19th century onwards clearly provided much of the motivation to move. Gyan Pandey has argued that a significant decline in demand occurred across much of the eastern united provinces. In some towns the numbers of looms in use fell by the 1890s to a fraction of the number that had been at work 50 years earlier. Certainly significant here was the decline of consumption by both the old nobility of the Mughal empire and aristocracy of the regional ‘successor states’ which had a profound impact on many producers. This region, after all had once supplied a large portion of the needs of the nobility all over northern India. Mill
made goods from England and then from western Indian mills no doubt absorbed much of the demand for products of finer and middlish quality.\textsuperscript{44} In addition the low standard of living in the region meant that demand from local agriculturalist, who still used handloom products to fill a substantial portion of their clothing needs\textsuperscript{45}, was hardly sufficient to sustain the pre-existing population of weavers, those centres that continued to support substantial weaving populations such as Varanasi and Azamgarh, often possessed markets that stretched far beyond the region.\textsuperscript{46} Handlooms weavers of north India were also at a relative disadvantage because of the nature of the raw material manufactured in the area. Since cotton grown in the United Provinces was of poor quality, the Kanpur mills generally provided only the coarser forms of yarn, with virtually none of counts higher than 20.\textsuperscript{47} When prices of raw materials rose or when agricultural seasons were poor weavers who had been living on the brink of subsistence were squeezed out of their profession at least in their homeland.\textsuperscript{48}

A number of centres in eastern United Provinces continued to make cloth on a very large scale. In Azamgarh district for instance, 13000 looms were still working at the end of the 19\textsuperscript{th} century, though the industry was reported to be in a state of serious decline. After a significant contraction in the first decade of the 20\textsuperscript{th} century, the number of loom rebounded to about the same level by the 1920s.\textsuperscript{49} The evidence seems to suggest comparatively little out-migration of weavers in this district.\textsuperscript{50} By contrast Allahabad no longer possessed handloom centres of much significance, and most of those still involved in weaving produced coarse cloth for local agriculturist.\textsuperscript{51}
Weavers in the region were well-known for their mobility. As one official stated, in artisans or trading communities, the individual is far more migratory, and it is not unusual for a heavily indebted artisan or small trader to decamp, leaving no trace behind him. No doubt, some artisans circulated from place to place within northern India. But many thousands migrated toward the Bombay Presidency whose they expected employment prospects to be better.

In 1881, the number of non-Bengalis living in the four district of the Calcutta metropolitan area was found to be 279,621 or 7% of the total population of these districts. In the twenty years from 1891 to 1911 the number of immigrants from U.P., Bihar and Orissa swelled by order 100% of 695,855. U.P. alone provided about a third of the immigrants throughout this period. 95,346 in 1891, 188,543 in 1901 and 235,487 in 1911. Of the U.P. migrants by far the largest number came from the handful of Bhojpuri-speaking districts in the east of the province, notably Ghazipur (which accounted for nearly 29000 migrants in 1901), Azamgarh and Ballia (nearly 25,000 each in the same year). Banaras (over 20,000) and Jaunpur (over, 17,000).

Table 1. Major Sources of Migration from Bihar, Orissa and the United Provinces to the Metropolitan Area by Districts, 1901 and 1921 (number of migrants)

<table>
<thead>
<tr>
<th></th>
<th>1881</th>
<th>1901</th>
<th>1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saran</td>
<td>18,165</td>
<td>48,833</td>
<td>52,138</td>
</tr>
<tr>
<td>Gaya</td>
<td>25,896</td>
<td>48,248</td>
<td>62,483</td>
</tr>
<tr>
<td>Patna</td>
<td>28,247</td>
<td>46,602</td>
<td>43,497</td>
</tr>
<tr>
<td>Location</td>
<td>1881</td>
<td>1921</td>
<td>1901</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Shahabad</td>
<td>24,613</td>
<td>35,768</td>
<td>47,471</td>
</tr>
<tr>
<td>Muzaffarpur</td>
<td>-</td>
<td>21,423</td>
<td>35,033</td>
</tr>
<tr>
<td>Monghyr</td>
<td>7,398</td>
<td>17,297</td>
<td>38,713</td>
</tr>
<tr>
<td>Ranchi</td>
<td>-</td>
<td>11491</td>
<td>N.A.</td>
</tr>
<tr>
<td>Hazaribag</td>
<td>4,774</td>
<td>10,220</td>
<td>N.A.</td>
</tr>
<tr>
<td>Darbhanga</td>
<td>615</td>
<td>5,064</td>
<td>17,709</td>
</tr>
<tr>
<td>Manbhum</td>
<td>1,510</td>
<td>2,673</td>
<td>N.A.</td>
</tr>
<tr>
<td>Bhagalpur</td>
<td>1,813</td>
<td>2,121</td>
<td>N.A.</td>
</tr>
<tr>
<td>Santhal Pargana</td>
<td>663</td>
<td>500</td>
<td>N.A.</td>
</tr>
<tr>
<td>Bihar (Total)</td>
<td>1,13,694</td>
<td>2,50,240</td>
<td>2,97,044</td>
</tr>
<tr>
<td>Cuttak</td>
<td>24,805</td>
<td>40,025</td>
<td>94,758</td>
</tr>
<tr>
<td>Balasore</td>
<td>9,318</td>
<td>15,454</td>
<td>35,914</td>
</tr>
<tr>
<td>Puri</td>
<td>N.A.</td>
<td>936</td>
<td>N.A.</td>
</tr>
<tr>
<td>Orissa (Total)</td>
<td>34,123</td>
<td>56,405</td>
<td>1,30,672</td>
</tr>
<tr>
<td>Ghazipur</td>
<td>N.A.</td>
<td>28,874</td>
<td>31,061</td>
</tr>
<tr>
<td>Azamgarh</td>
<td>N.A.</td>
<td>24,874</td>
<td>23,924</td>
</tr>
<tr>
<td>Ballia</td>
<td>N.A.</td>
<td>24,333</td>
<td>25,489</td>
</tr>
<tr>
<td>Banaras</td>
<td>N.A.</td>
<td>20,296</td>
<td>24,554</td>
</tr>
<tr>
<td>Jaunpur</td>
<td>N.A.</td>
<td>17,438</td>
<td>20,511</td>
</tr>
<tr>
<td>Allahabad</td>
<td>N.A.</td>
<td>9,678</td>
<td>N.A.</td>
</tr>
<tr>
<td>Mirzapur</td>
<td>N.A.</td>
<td>9,484</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rest of U.P.</td>
<td>N.A.</td>
<td>53,631</td>
<td>N.A.</td>
</tr>
<tr>
<td>United Provinces (Total)</td>
<td>N.A.</td>
<td>1,88,511</td>
<td>1,25,539</td>
</tr>
</tbody>
</table>

The table shows that three immigration movements originated separately in Bihar, Orissa and the U.P. But scrutiny of this table reveals that these movements were highly specific in origin. Thus the sources of most of these immigrants were confined to two narrow tracts – one the western districts of Bihar (Gaya, Patna, Shahabad, Saran and Muzaffarpur) and the adjoining eastern districts of U.P. (Azamgarh, Ballia, Ghazipur, Banaras and Jaunpur) and third consisting of two Orissa districts (Cuttak and Balasore).

One might add that this history of migration cannot simply be read as a care of certain men and women changing one occupation for another by choice. It has been argued that the migrants from these areas had little choice in the matter.54

The recent folklore of the Bhojpuri region certainly provides ample testimony to this. The poet Bihari Thakur’s Bidesiya a lament for the loved one who has gone ‘abroad’, acquired a remarkable popularity in, villages and towns throughout this region.55 ‘Calcutta’ quickly became a metaphor for the husband’s paramour, the wife’s greatest rival. The ‘East’ – rather different from that of the orientalists became the land where one could make one’s fortune but also the land which could break up one’s family:

Poorab Ke deshwa men Kailee nokaria,

Te Karee Sonwan Ke rojgar jania ho.

(one who obtains service in the East can fill his house with gold).
Railia na bairee

Jahajia na bairee

Nokaria bairee na

(Railroads are not our enemy,
Nor are the Steamship

Our real enemy is naukri, i.e. service away from home)\(^5\)

Thus it appears that the heredity of occupation is no longer strictly adhered to be many artisans caste. This is due to the fact that now-a-days (second half of the 19\(^{th}\) century) the local demand for household crafts is not sufficient to keep all the members of the artisans castes employed. As a result the unemployed members are forced to take up other vocations. A craftsman prefers to adopt some other avocation when his hereditary occupation fails to support him in the struggle for existence.

WAGES:

The village artisan mostly used to get their wages in barter system which was very common from ancient India. The dues of the village potter, blacksmith, carpenter and weaver were to be paid in both in terms of agricultural products and cash. For example – In colonial period, in Gangetic Bihar goldsmiths always work at home but are watched by their employers to see that they do not adulterate the metals. The price for working silver was from one sixteenth to one-fourth of the metal according to the nature of work. In case of gold the price is from one-fourth to one rupee of silver for every rupee’s weight of gold. In Patna the making of
gold and silver wire gives employment to three sets of workmen. The workmen have no capital except their implements. Merchants furnish the materials and pay them by the quantity of work. In Purnea district (Bihar) the weavers of cotton carpets (Sutranji) were given only 28 rs. 2a for each man per annual. But this is greatly underrated. These men have no land and their annual expenditure is certainly not less than 42 rs. and more probably 48 rs. As dyers in the South-East corner of Purnea about 50 houses (Rangkar) are employed for the weavers to dye silk thread with indigo and lac. The remainder (Rangrez) scattered through the country, are chiefly employed to dye turbans and girdles with perishable colours (turmeric and safflower), which are renewed occasionally as the cloth becomes dirty. These men make high wages from 6 to 8 rs. a month. So far paper making is concerned that each beater makes annually 100 reams (Gaddis) of paper. But the workmen here, instead of three qualities, it divided into four. The highest values specify is worth 5 rs. a ream. They make four bales (Ghani) in the year, each bale containing 25 reams. In Bhagalpur district (Bihar) about 1/3 of the weavers are employed in weaving the Kharisaris. Each will weave to the value of rather more than 19 rs. a month.

The traditional system of remuneration in kind or in fees continues even till today to a great extent in Indian economic life. The payment of village craftsmen is “either a payment in kind, or a grant of land, besides perquisites on special occasions. For their customary services they are rapid at harvest time, receiving a fixed proportion of sheaves of grain from the crop collected on the threshing floor, or they may be given a share of
The village craftsmen also receive money payment either on daily wage basis or on contract basis. In the towns and cities, however, the skilled craftsmen employed in the workshops of the master craftsmen are either paid monthly salary or daily wages. The young apprentices who undertake training either under a master craftsmen or in a training-cum-production centre also receive fixed monthly stipend or daily wages in lieu of services rendered by them. In case of craftsmen working on a contract basis, their earnings are sometimes reckoned at either by the weight of the main raw material on which they work, or by the volume of finished work they turn out.

**MARKETING**

The handicrafts produced in the villages, towns and cities are largely, if not entirely for commercial use. The products are generally disposed of through the following channels.63

(i) **Sale at residence.**

A part of the articles produced by the craftsmen are sold directly from their residences or workshops. The customers go to the residences or workshops of the craftsmen and purchase the articles according to their choice.

(ii) **Hawking**

Sometimes the craftsmen dispose of their products to the nearby hats, villages and towns and sell them directly to the consumers.
(iii) **Local Market**

The rural artisans often sell their products in the local markets where other articles of day to day use are also sold. In the local markets the product are generally displayed in the stalls for sale. The customers purchase their required articles from these stalls.

(iv) **Fairs or Melas**

In north India, fairs or melas generally take place in certain religious occasions or festivals. The craftsmen living in nearby villages or towns participate in these fairs or melas and dispose of their products directly to the consumers. The products are also sold in the industrial fairs organized by the central and state Government.

(v) **Weekly or Bi-weekly Hats**

Weekly or bi-weekly hats are generally held in the rural areas. The craftsmen living in the adjoining areas take their products to these hats and dispose them of directly to the consumers.

(vi) **Established Marketing Channels in Specific Areas**

There are established markets for particular crafts in the specific areas of many of the towns and cities in the country. The articles displayed in the shops for sale are either manufactured in the workshops attached to the shops or procured through dealers or commission agents. Sometimes the articles are also purchased directly from the local craftsmen on contract or order basis. In the organized markets the products are generally sold district to the customers.
(vii) Supply on Contract or Order Basis

The craftsmen also dispose of their products on contract or order basis. They receive contracts or orders either from the individuals or from the dealers, traders and contractors and supply the articles according to their specifications. Sometimes the craftsmen receive some advance payment for purchasing the main raw material. The system of advancing craftsmen known as dadan or dadani. It was learned by the European Companies from the Indian merchants. Most scholars now agree that it existed before the Europeans began their business activities in India.64 To quote V.I. Pavlov “It is difficult to imagine how could the agents of the European East India Companies procure textiles by this method had it not been an already established practice for the Indian middleman to advance the artisans.”65

(viii) Sales Shops or Depot of Co-operative Societies

The cooperative societies organized by the craftsmen have got their own shops through which products of societies are disposed of direct to the consumers. Sometimes the societies execute orders of the state Industries Departments.

(ix) Sales Emporia of the Central or State Governments

Handicrafts goods are also sold through the central and state Cottage industries emporia. The products procured by these emporia on order basis either from the co-operative societies or from the craftsmen are dispose of direct to the consumers. Sometimes these emporia also dispose of these products to different private and public organizations.
(x) Exporters including Private and Public Organisations

The craftsmen do not undertake the export of their products directly. They receive orders from the dealers, exporters and the exporter-cum-dealers at Delhi, Bombay, Calcutta, Agra and Banaras, and Supply the goods to them. Through their individual efforts these dealers, exporters and exporters-cum-dealers establish 'commercial contacts with foreign market and export the handicraft goods which in the great demand.

Conclusion

The village and urban industry was not a flourishing state. The only two important classes of artisans, who were tolerably well-off and were not greatly affected by foreign competition, were the blacksmiths and the carpenters. This was so largely because the existence of these artisans in every village was peculiarly necessary in the existing condition of the methods of cultivation. Most of the other groups of artisans were in a bad condition and their numbers decaying. In the matter of alternative occupations also, it was only the blacksmith and the Carpenter class who had a fair chance in the towns of earning a living in their particular occupations. For other artisans, driven out of their occupation, unskilled general labour was the only alternative. Secondly, the effect of famines on artisans – Materially artisans were on much the same level as the ordinary labourer. Some of them indeed, the weaver for example were much below this level. Thus the village artisan together with the lower village menial and the agricultural day labourer, was the first to seek relief in famine times. Of all classes the weaver came the earliest. He also suffered most of account of
this compulsory abandonment of his occupation. For on the relief work all were employed on rough manual work. The Carpenters, the blacksmiths, the masons might sometimes get employment in their own trade, but for others these was no such hope. The weavers, unused entirely to manual work, suffered most. Many of them lost their skill during this period and it was hard for them to take to their occupation again.

The study of the socio-economic status of the artisans with special reference to guild, organization, localization of crafts in specified areas, mobility of occupation, wages and marketing reveals the fact that the traditional type of economic organization of the artisans may have undergone some changes in the course of ages but its basic characteristics have almost remained unchanged or unaffected over the centuries.
NOTES AND REFERENCES


8. For instance, “British Steam and Science uprooted over the whole surface of Hindoostan the Union between agriculture and industry’ in the British Rule in India’ in K. Marx and F. Engels, On Colonialism, Moscow, n.d. P. 36.


12. The Carpenter, ‘The blacksmith, the washerman, the barber, the potter etc., Still exist as village servants with recognized duties and remuneration. See J.T. Marten, *Report of Census of Central Provinces*, 1911.


15. *Ibid*.


24. Ibid., P. 148.


29. Ibid., P. 107.

30. Drake-Brockman, *op. cit.*, P. 118, S.H. Fremantle, *Report on the supply of labour in the United Provinces and in Bengal*, 1906, Para 30 noted that in Kanpur Cotton Mills in 1905 42% of the Labour force was muslim, and third of these were Julahas. After Musalamans come Koris, the Hindu handloom weaver caste...... this caste....predominate not only in the weaving sheds, but all over the mill over any other Hindu
caste and forms more than one – fifth of the whole number of workmen.’


33. Based on the information collected in connection with the craft studies undertaken by the social Studies Division, office of the Registrar General of India, New Delhi, see also B.K. Roy Burman (ed.) *Census of India*, 1961, Vol. I, Monograph NO. 3 Part VII-A.

34. George Birdwood, *op. cit.*, P. 139.


37. Based on the data collected by the social studies Division, office of the Registrar General, India, New Delhi, 1967.


42. Gyan Pandey, ‘Economic Dislocation’, *op. cit.*, PP. 96-104.

43. C.A. Silberrad, *A Monograph on Cotton Fabrics op. cit.*, P. 46. on the drastic decline for the jamdani of Tanda, see Govt. of India Report of


47. A.C. Chatterjee, *op. cit.*, P. 20.

48. From Director of Industries to Director of Public Instruction, United Provinces, 27 Sept. 1911 in U.P. State Archives, Department of Industries, File No. 410.


51. A.C. Chatterjee, *op. cit.*, P. 16.


55. The Bidesiya, Composed by Behari in early 20th century quickly attained the status of a folk-form: many recensions may be obtained in the small towns and the cities of Eastern U.P. and Western Bihar.


63. Based on personal observations as well as the information received from the All India Handicrafts Board, R.K. Puram, West Block No. 7, New Delhi. See also Reports on All India Handicrafts, Marketing Conference, Ranchi, 1954, New Delhi, 1962.


CONCLUSION

The introduction of western science and technology during the company phase of colonization may be viewed as an interaction between tradition and modernity, the traditional Scientific and cultural values of India on the one hand and the modern scientific and cultural development on the other. Generally it is believed, that Indian scientific and cultural values had degenerated to the lowest level by the time the British established their sovereignty in India. It is followed by the imperial contention that by giving modern scientific ideas and making technological innovations the British had repaid the ‘old debt’ it owed to India. Modern Science and Technology in India are thus reduced to the status of ‘blessing’ of the Raj. There is another aspect of this theory: the superiority of the European mind.

However, there is no evidence from which it can be inferred that Indian mind had been impoverished in the pre-colonial times or that modern science and technology had proved as contended, a blessing of the colonial rule. The new science and technology that developed in western Europe during the eighteenth and nineteenth centuries differed in many respects from the Indian tradition of science and technology. While the study of natural resources was the main feature of the new science, the mechanization of manufacturing units led to the technological breakthrough. In both the cases, the stimulating factor for development was the need to increase the output of national resources. Once this need for increasing ‘the wealth of nations’, was felt, European Scientist, artisans, merchants and even despotic rulers started looking forward. Their collective efforts,
therefore resulted in massive changes in the nature and scope of science and technology.

India, at the same time was content with the cultivation of its existing resources. Indian scientists and artisans were complacent about their own stock of knowledge and tools. Still it does not appear that the pre-colonial period was a phase of stagnation for Indian science and technology. Some technological changes did take place during the medieval period and Indians had shown great interest in some of the new technologies brought to them by the European adventurers and fortune seekers. But in most cases the adoption was restricted only to the possession of new devices. They made hardly any attempt to learn the process of manufacturing such new devices. They made hardly any attempt to learn the process of manufacturing such new devices.

The introduction of the new technologies by the British, which had direct bearing upon local people, evoked a great deal of interest among them. Two types of technologies were introduced during the 19th century: technologies for the consolidation of British power and for facilitating the export of Indian raw materials viz., steam-vessels, railways, electric telegraphs etc. and technologies to increase the production of Indian raw materials and to improve their quality, viz., agriculture implements, cotton-cleaning machines and the silk filature. Indian response to the technologies falling in the first category was not at all discouraging, as some of the imperialist had initially envisaged. On the contrary some communities, especially the trading community had pressed upon the British to expand the network. Technologies of the second type were introduced without taking stock of Indian conditions. The iron plough, the American ginning machine and the Italian filature system were all turned down
by the local users. The rejection was for the simple fact that the novelties did not suit Indian conditions and the staple products. The Indian however, did not show any inhibition in adopting some exotic seeds which the European planters had brought to India.

One noteworthy aspect of Indian response to western science and technology during this period is that all section of Indian society irrespective of their social status or religious affiliations came forward to appreciate what deserved to be appreciated. The Hindus, the muslims, the artisans, the cultivators, the feudal lord or the local ruler, all were aware of the magical spell of the new phenomenon and therefore approved its diffusion. Whatever resistance came, it was from those classes which had been traditional engaged in scientific professions viz, the hakims, the vaids and the village astrologers whose beliefs were caving in due to the inflow of new discoveries.

The downfall of the textile industry in Bihar and united Provinces during the first quarter of the nineteenth century amounted to an economic revolution, “It brought in its train colossal unemployment, devastating deaths, an increased pressure on land and above all a severe sense of gloom among those that survived the catastrophic. Many of the unemployed were reduced to the position of peripatetic medicants (Vairagis) singing the futility of life from door to door. Flourishing centres of textile manufacture turned to mere shadows of what they once had been. Thus a serious dislocation was caused in socio-economic structure of the country by this change. Apart from a large number of weavers and Spinners, many other classes of people like the cotton-beaters, dyers, printers, bleachers, needle-workers, traders etc. were thrown out of employment. A large number of unemployed person from this province went
as slave-labourers to different colonies of the British empire during the thirties and forties of the nineteenth century. Some of them were “Hill Coolies” coming from the hilly district of Santhal parganas and Chhotanagpur who joined this band of slave-labourers.

In the interwar period possibly 3 to 3.5 million persons were engaged in the cotton, silk and wool spinning-weaving industry. The mills employed about 10% of this total the rest used mainly hand tools and were organized in households or very small factories. Handlooms accounted for about 25% of the cotton cloth produced annually in the first half of the twentieth century. Market share of handloom cotton cloth was roughly stable between the 1890s and 1930s. The total production of handloom cotton cloth expanded by about 30% between 1900 and 1939. Throughout this period total cloth consumption was growing marginally. In cloths made of silk and other fibres, handlooms dominated. Taking all fibres except wool, in the 1930s handlooms, market-share in total cloth consumption in value may have been about 50 percent.

The period 1800-60 saw a net decline in textile employment. The export market for cloth began to wave from about 1800. Decline in cotton spinning began from the second quarter of the 19th century. It was speeded up only after the railways connected the ports with the interior that is 1860s and 1870.

In the period 1860-1900 the railways intensified competition for handloom cloth and the two famines of the Deccan plateau caused great disruptions of Industry. Commercialization of agriculture improve purchasing power and extended trade in cash crop regions. Better demand was favourable for both handloom and mill made cloth.
The first world war by creating an acute shortage of yarn, was a major disruption for the weaving industry. However, the interwar period was again one of growth. More importantly this was also the period when most types of changes in organization and technology occurred. Migration into textile towns which began in as early as the mid-nineteenth century and by the 1920s increased in scale. The powerloom factory began to spread towards the end of the interwar period.
Figure 1. Ploughs and Seed-drills

 Courtesy: Shahid Amin (ed.), *A Concise Encyclopaedia of Northern Indian Peasant Life Being a Compilation from the Writings of William Crooke, J.R. Reid & G.A. Grierson*, Manohar, New Delhi, 2005
Figure 2. A Group of Agricultural Implements

Courtesy: Shahid Amin (ed.), Ibid.
Figure 3. A Wooden Roller Kolhu
Courtesy: Shahid Amin (ed.), *Ibid*
Figure 4. A Wooden Mortar and Pestle Kolhu

Courtesy: Shahid Amin (ed.), Ibid.
Figure 5. Stone Kolhu of Banaras-Azamgarh

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 6. A Barber

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 7. A Mutton Butcher

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 8. A Cotton Weaver Combing a Warp

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 9. A Dyer

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 10. A Carpenter

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 11. Blacksmiths

Courtesy: Shahid Amin (ed.), *Ibid*
Figure 12. Potters

Figure 13. A Grain Merchant

Courtesy: Shahid Amin (ed.), *Ibid*
NOTES ON ILLUSTRATIONS

Figure I. Three Agricultural Implements: Nagur with Surta behind the share; Nagur Surta behind; Mogra with two Surtas attached.

Nagur is a heavy plough with a perpendicular frame. In Bundelkhand it is a four ox plough. The mogara has two shares and ropes rather than pegs are used to various parts of the plough in all the three drawings. The seed tubes are also tied to the ploughs rather than handled separately.

Figure II. A Group of Agricultural Implements:

1. Kirlee (large rake)
2. Toplee (basket)
3. Jharnee (broom)
4. Datar (small rake)
5. Phoura (mattock)
6. Soop (winnowing)

Kirlee – the biggest and the most intriguing of the implements is not described in any of four standard sources. The drawing approximates closely to bidar: ‘a sort of rake or harrow, worked by oxen to loosen the soil and extricate weeds from a crop of young rice’ (Para 29; Khakhorni and Kanta in Bihar Peasant Life). It is uncertain that there would have been a specialized weeding instrument for rice in a wheat belt like the Upper Doab in the early 1830s. The kirlee could be of Meerut and be the pachpariya of north Bihar, a kind of plough with five shares used in indigo factories. (Cf. Grierson, Para 37). The Jharnee (broom) is called barhni in eastern U.P. The datar is a rake used for collecting cut-grass.
Figure III. Sugarcane Press, Boiling Pans and Spoons

This illustration of a triple wooden roller cane press from the Meerut region, C. 1840, is somewhat puzzling. All our sources are agreed that it was the mortar-and-pestle kolhu as detailed in illustration IV, which was characteristic of the Gangetic plains in the first three quarters of the nineteenth century (see also Irfan Habib, IHR, V: i-ii, 1979, PP. 156-8). The puzzle of this illustration still remains, for we have no other description of vertical wooden rollers from Western UP for this period.

Figure IV. The wooden Mortar and pestle cane Mill and Ground plan of the Boiling Apparatus :

The Mill and the boiler used in preparing the extract of sugarcane, Buchanan noted in 1808 for Dinajpur were usually let by the day. In U.P. in the late nineteenth century, the Kolhu was often jointly owned by three to six peasant households, but the boiling pans much fewer in number and usually of iron, were hired for the season. Crooke relies heavily on an advanced copy of the Azamgarh settlement Report of 1881 for his account of the cane Mill and the Boiling House (Paras 114-32). The report on Azamgarh district contains separate drawings for the mortar, the pestle and the moving gear. These show only minor variations on Buchanan's 1808 Kolhu from Dinajpur. One obvious difference is that, unlike in most other parts of northern India, Kolhus in Azamgarh and the Cis-Ghaghra districts generally were fabricated from blocks of Chunar stone.

Figure V. The Stone Kolhu of Banaras – Azamgarh
In cis-Ghaghrā district like Azamgarh in close proximity to the quarries of Chunar, the cylindrical block of the Kolhu, some four feet high, was worked out of sandstone. These blocks were fashioned as to last well over a hundred years.

**Figure VI.** A Barber his tools for cutting and shaving off hair are as follows:

1st row – The turban of the client whose head is being shaved. Tooth-extractor (Jamura in U.P.). Scissors, Mirror.

2nd row – Cup for holding water, Nail cutter (*naharni* in U.P.), Tweezers (*mochna* in U.P.), comb.


4th row – Razor, Big Razor, Small razor (*ustara* in U.P.)

5th row – Lancent and cup, A Strip of leather for cleaning the barber’s kit bag.

It is noted that the north Indian terms *qainchi kanghi* and *naharni* are not mentioned in the illustration. The term used for scissors is the Arabic *miqraz*. The term *miqraz* was not in common use in north India.

**Figure VII.** Representation of the Mutton Butcher:

Sitting in his shop and selling meat. His tools and implements are as follows – from right to left.
1st row – hanging meat hooks, A second weighing balance with weights and meat.

2nd row – Pitcher of water, knife, The butcher block, with the large knife (bugda in U.P.).

3rd row – A pot to wash meat in, Earthen pot, stick, Decapitated goat, Unskinned.

**Figure VIII.** Representation of the cotton Weaver and his tools.

The weaver has stretched the warp on a wooden frame between two posts. He is applying starch (*maya*) with a comb of soft twigs and separating the threads.

In U.P. the thread is stretched out on pieces of bamboo (*pai*) and brushed clean with the kunch, a common word for brush. *Maya* and *kalaf* are two common words used for starch. The bottom half shows, from right to left.

Kangri, a portable heater, a pitcher and *maya* placed on a board. Below this, a women reels cotton, using reels with iron and wooden pins and the starched thread. Stretched out on wooden pins.

**Figure IX.** Representation of the Dyer with his tools. The Dyer is taking out a dyed than from the cauldron.

In the bottom half, dyed woollen thread, scales with weights, water containers of various sizes, a reel with woollen thread wrapped on it and two sticks for mixing up the dyers and taking the dyed cloth out are depicted.

**Figure X.** Representation of the Carpenter with his tools.
The carpenter is shown fabricating a wooden frame, adze in hand. *Kulhari* and *basula* rather than the Persian *tesha* are the common terms for the adze in U.P. and Bihar.

The bottom half shows the entire range of the carpenter's tools: saws, planes, chisels and measuring and drawing instruments like the yard and the compass.

The pair of pincers for drawing nails (first row) is *jamura* in UP (the same word is used for the barber – Surgeon's tooth extractor). The other instruments in this row – the different sized planners and the compass – are called *randa* and *parkar* in the picture, prevalent in UP and Bihar as well. The term *ari* and *ara* for the small and the big saw are common to the illustration and to the north Indian countryside.

**Figure XI.** Representation of Blacksmiths with tools. The blacksmith, aided by his assistant, is working on the anvil. He is holding the hammer in one hand, while with the other he tackles the heated iron in the furnace.

In the bottom half shows the blacksmith's tools and accessories along with a sample of the finished products. Some of the tools listed are, the file (sohan), hammers, pliers and piercing instruments.

**Figure XII.** Representation of the potter and his tools.

The potter having thrown the clay on the wheel, turns it and shapes a cup. The string to remove the earthenware (called *cheuni* in U.P.) is in his left hand. His wife kneads the clay. A water cup and the potters turning stick are also shown in the top portion.
In the bottom half, the potter’s kiln (*awa* in UP) is prominently displayed. Next to it are the potter’s wheel and the turning stick (*chak* and *chakait* respectively in UP).

**Figure XIII.** Representation of the Grain Merchant and the Accessories used in selling Grain.

The grain merchant is sitting in his shop. He has kept a variety of grains in different baskets. He weighs the grain, holding the scales in his hand.

Among the grain shown in the top half are rice and wheat flour, while rice, red rice and mung dal.

In the bottom half shows larger earthen jars and pots in which grains are stored.
### Appendix - I

**Table showing Buchanan’s Estimate of Total Looms, Total cloth output and Total Cloth Exports from the Bihar Districts at The Turn of the Nineteenth Century**

<table>
<thead>
<tr>
<th>Type of cloth in the districts</th>
<th>Total looms</th>
<th>Coarse looms</th>
<th>Coarse output (Rs.)</th>
<th>Fine looms</th>
<th>Fine output (Rs.)</th>
<th>Total Exports (Rs.)</th>
<th>Exports as a percentage of output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purnea</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silk</td>
<td>200</td>
<td>200</td>
<td>48600</td>
<td>*3000</td>
<td></td>
<td>3000</td>
<td>42000</td>
</tr>
<tr>
<td>Silk/cotton</td>
<td>7000</td>
<td>10000</td>
<td>1089000</td>
<td>3500</td>
<td></td>
<td>30000</td>
<td>941000</td>
</tr>
<tr>
<td>Cotton</td>
<td>13555</td>
<td></td>
<td>1886000</td>
<td></td>
<td></td>
<td></td>
<td>1272000</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td><strong>Bhagalpur</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silk/cotton</td>
<td>3275</td>
<td>1000</td>
<td>117000</td>
<td>2000</td>
<td>342000</td>
<td>*201000</td>
<td>6500</td>
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<td>Cotton</td>
<td>7279</td>
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<td></td>
<td>949440</td>
<td></td>
<td></td>
<td></td>
<td>16 or 27</td>
</tr>
<tr>
<td><strong>Patna-Gaya</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silk-cotton</td>
<td>1622</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,000^</td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>24352</td>
<td></td>
<td>2438621</td>
<td></td>
<td></td>
<td>421710</td>
<td>124000</td>
</tr>
<tr>
<td>Khes</td>
<td></td>
<td></td>
<td></td>
<td>750</td>
<td>540000</td>
<td>175000</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>2438621</td>
<td></td>
<td></td>
<td>961710</td>
<td>856000</td>
</tr>
<tr>
<td><strong>Shahabad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silk/Cotton</td>
<td>90</td>
<td></td>
<td>9450</td>
<td></td>
<td></td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>7950</td>
<td></td>
<td>622950</td>
<td></td>
<td></td>
<td>204000</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>1624550</td>
<td></td>
<td></td>
<td>209000</td>
<td>25 or 11.3</td>
</tr>
</tbody>
</table>

---


*Refers to exports of Chikta Silk cloth

+Refers to exports of Maldehi magru and other cloth of silk and cotton mixed.
Appendix - II

Information about the monthly or annual earnings of artisans in the Bhagalpur District surveyed by Francis Buchanan.

The left hand column gives the page references to the information contained in Martin Montgomery, *op.cit.*, vol. II, Bhagalpur

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>252</td>
<td>Tanners-paid in grain in the villages; each family makes 3 rs. a month; good workmen to towns make 5 to 6 rs. a month.</td>
</tr>
<tr>
<td>254</td>
<td>Mahuya Distillers – make a profit of 21 rs. 10a. a month</td>
</tr>
<tr>
<td>256</td>
<td>Wages of journeymen – 1½ to 2a. a day</td>
</tr>
<tr>
<td>259</td>
<td>Owners of lime kilns – with hired labour they make 80 rs. a year from each kiln from which they have to deduct 10 rs. for rent.</td>
</tr>
<tr>
<td>273</td>
<td>Tasar silk preparers (mainly women) make 1½ to 1¾ rs. a month</td>
</tr>
<tr>
<td>275</td>
<td>Tasar silk weaver – annual gain 46 rs.</td>
</tr>
<tr>
<td>275</td>
<td>Tasar silk weavers – journeymen make 2½ rs. a month</td>
</tr>
</tbody>
</table>
Appendix III

Buchanan's Estimate of the number of Artists in the District of Purnea

<table>
<thead>
<tr>
<th>No.</th>
<th>Craft Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Painters</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Churigar or preparer of glass bracelets or rings</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Mat makers</td>
<td>109</td>
</tr>
<tr>
<td>4.</td>
<td>Dom and Dharkar, bamboo furniturer</td>
<td>1,289</td>
</tr>
<tr>
<td>5.</td>
<td>Paper makers</td>
<td>65</td>
</tr>
<tr>
<td>6.</td>
<td>Shoe makers or chamar</td>
<td>1338</td>
</tr>
<tr>
<td>7.</td>
<td>Atushbag</td>
<td>29</td>
</tr>
<tr>
<td>8.</td>
<td>Distillers</td>
<td>98</td>
</tr>
<tr>
<td>9.</td>
<td>Carpenter</td>
<td>761</td>
</tr>
<tr>
<td>10.</td>
<td>Pot makers or kumar</td>
<td>1,690</td>
</tr>
<tr>
<td>11.</td>
<td>Sonar or Goldsmiths</td>
<td>925</td>
</tr>
<tr>
<td>12.</td>
<td>Kasera and Thatera</td>
<td>574</td>
</tr>
<tr>
<td>13.</td>
<td>Bidri</td>
<td>71</td>
</tr>
<tr>
<td>14.</td>
<td>Lohar</td>
<td>1,250</td>
</tr>
<tr>
<td>15.</td>
<td>Dhunaru</td>
<td>539</td>
</tr>
<tr>
<td>16.</td>
<td>Cotton spinner</td>
<td>2,87,000</td>
</tr>
<tr>
<td>17.</td>
<td>Rungrez or Dyers</td>
<td>37</td>
</tr>
<tr>
<td>18.</td>
<td>Silk weavers</td>
<td>150</td>
</tr>
<tr>
<td>19.</td>
<td>Silk and cotton weaver</td>
<td>6,950</td>
</tr>
<tr>
<td>20.</td>
<td>Tangti and Jola or cotton weavers</td>
<td>13,555</td>
</tr>
<tr>
<td>21.</td>
<td>Blanket weavers</td>
<td>234</td>
</tr>
<tr>
<td>22.</td>
<td>Saltpetre makers</td>
<td>550</td>
</tr>
</tbody>
</table>

# Appendix IV

**Buchanan’s Estimate of the number of Artists in the District of Bhagalpur**

<table>
<thead>
<tr>
<th>No.</th>
<th>Craft</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Picture painters</td>
<td>16</td>
</tr>
<tr>
<td>2.</td>
<td>Churisaz or bracelet makers</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>Mat makers</td>
<td>382</td>
</tr>
<tr>
<td>4.</td>
<td>Thatheras</td>
<td>600</td>
</tr>
<tr>
<td>5.</td>
<td>Dom or Bangsphor or basket makers</td>
<td>796</td>
</tr>
<tr>
<td>6.</td>
<td>Paper makers</td>
<td>96</td>
</tr>
<tr>
<td>7.</td>
<td>Shoe makers or chamar</td>
<td>1669</td>
</tr>
<tr>
<td>8.</td>
<td>Atushbaz or preparers of fire works</td>
<td>44</td>
</tr>
<tr>
<td>9.</td>
<td>Distillers</td>
<td>132</td>
</tr>
<tr>
<td>10.</td>
<td>Lohar or Barhai, who make the whole of the implements of agriculture and coarse furniture</td>
<td>1340</td>
</tr>
<tr>
<td>11.</td>
<td>Carpenters who only make finer furniture</td>
<td>73</td>
</tr>
<tr>
<td>12.</td>
<td>Carpenters who only make the wooden parts of the implements of agriculture and coarse furniture and boats</td>
<td>360</td>
</tr>
<tr>
<td>13.</td>
<td>Potters</td>
<td>1177</td>
</tr>
<tr>
<td>14.</td>
<td>Goldsmiths</td>
<td>725</td>
</tr>
<tr>
<td>15.</td>
<td>Kasera and Thatera who make vessels of copper, brass and bell metal</td>
<td>458</td>
</tr>
<tr>
<td>16.</td>
<td>Lohars who only make the iron work of the implements of agriculture on coarse work for country use and forge crude iron</td>
<td>281</td>
</tr>
<tr>
<td>17.</td>
<td>Blacksmiths, who make finer work</td>
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</tr>
<tr>
<td>18.</td>
<td>Dhunia or cotton cleaners</td>
<td>1185</td>
</tr>
<tr>
<td>19.</td>
<td>Spinners of cotton</td>
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</tr>
<tr>
<td>20.</td>
<td>Dyers or Rungrezs</td>
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</tr>
<tr>
<td>21.</td>
<td>Weavers who work in Tasar and silk</td>
<td>1138</td>
</tr>
<tr>
<td>22.</td>
<td>Weavers who work in cotton cloth</td>
<td>6212</td>
</tr>
<tr>
<td>23.</td>
<td>Weavers who work in cotton carpets</td>
<td>3</td>
</tr>
<tr>
<td>24.</td>
<td>Blanket weavers</td>
<td>157</td>
</tr>
<tr>
<td>25.</td>
<td>Nuniyas who make saltpeter</td>
<td>174</td>
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</table>

Appendix V

Some Selected Number of Artists in the city of Patna and District of Behar

<table>
<thead>
<tr>
<th>Classification of Artists</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Architects and Statuaries houses</td>
<td>40</td>
</tr>
<tr>
<td>2. Picture painters Musawir wallehs</td>
<td>12</td>
</tr>
<tr>
<td>3. Soap makers</td>
<td>77</td>
</tr>
<tr>
<td>4. Churisaz or glass bracelet makers</td>
<td>282</td>
</tr>
<tr>
<td>5. Ink makers</td>
<td>6</td>
</tr>
<tr>
<td>6. Thatchers</td>
<td>586</td>
</tr>
<tr>
<td>7. Paper makers</td>
<td>64</td>
</tr>
<tr>
<td>8. Atushbaz or preparer of fire works</td>
<td>118</td>
</tr>
<tr>
<td>9. Chamar tanners and shoe makers</td>
<td>3462</td>
</tr>
<tr>
<td>10. Chikundos make a kind of shoes called chikun black cloth embroidered with coloured silk</td>
<td>2</td>
</tr>
<tr>
<td>11. Zurdos make the embroidered part of the fine shoes</td>
<td>37</td>
</tr>
<tr>
<td>12. Kufsdoz join the embroidered part to the leather in fine shoes</td>
<td>6</td>
</tr>
<tr>
<td>13. Distillers shops</td>
<td>483</td>
</tr>
<tr>
<td>14. Barhai, those who make coarse wooden furniture and implements of agriculture</td>
<td>3128</td>
</tr>
<tr>
<td>15. Lohar &amp; Barhai, who are both blacksmith and carpenters</td>
<td>513</td>
</tr>
<tr>
<td>16. Lohar or Blacksmiths</td>
<td>1219</td>
</tr>
<tr>
<td>17. Kasera</td>
<td>478</td>
</tr>
<tr>
<td>18. Thathera</td>
<td>402</td>
</tr>
<tr>
<td>19. Goldsmiths</td>
<td>2293</td>
</tr>
<tr>
<td>20. Potters</td>
<td>2900</td>
</tr>
<tr>
<td>21. Dhunia or cotton cleaners</td>
<td>1873</td>
</tr>
<tr>
<td>22. Spinners of cotton</td>
<td>330396</td>
</tr>
<tr>
<td>23. Dyers or Rungrez</td>
<td>552</td>
</tr>
<tr>
<td>24. Nilgur or dyers with Indigo</td>
<td>5</td>
</tr>
<tr>
<td>25. Weavers who work in Tasar silk and Tasar mixed with cotton thread</td>
<td>782 (Houses)</td>
</tr>
<tr>
<td>26. Weavers of cotton cloth</td>
<td>19900 (houses)</td>
</tr>
<tr>
<td>27. Kundikor who betle bleached cloth</td>
<td>24</td>
</tr>
<tr>
<td>28. Weavers of carpets</td>
<td>209</td>
</tr>
<tr>
<td>29. Blanket weavers</td>
<td>564</td>
</tr>
<tr>
<td>30. Furnace for making nitre</td>
<td>566</td>
</tr>
</tbody>
</table>

## Appendix VI

**Buchanan’s Estimate of the number of Artists in the District of Shahabad**

<table>
<thead>
<tr>
<th>No.</th>
<th>Trade Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Painters, houses</td>
<td>23</td>
</tr>
<tr>
<td>2.</td>
<td>Soap makers</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>Makers of glass ornaments</td>
<td>249</td>
</tr>
<tr>
<td>4.</td>
<td>Mat makers</td>
<td>86</td>
</tr>
<tr>
<td>5.</td>
<td>Paper makers</td>
<td>60</td>
</tr>
<tr>
<td>6.</td>
<td>Shoe makers or chamar</td>
<td>2050</td>
</tr>
<tr>
<td>7.</td>
<td>Distillers of spirituous liquors</td>
<td>112</td>
</tr>
<tr>
<td>8.</td>
<td>Carpenters</td>
<td>727</td>
</tr>
<tr>
<td>9.</td>
<td>Carpenters and blacksmiths</td>
<td>1245</td>
</tr>
<tr>
<td>10.</td>
<td>Blacksmiths</td>
<td>895</td>
</tr>
<tr>
<td>11.</td>
<td>Coppersmith called Kaseras</td>
<td>41</td>
</tr>
<tr>
<td>12.</td>
<td>Workers in tin</td>
<td>27</td>
</tr>
<tr>
<td>13.</td>
<td>Gold and silversmiths</td>
<td>840</td>
</tr>
<tr>
<td>14.</td>
<td>Potters</td>
<td>910</td>
</tr>
<tr>
<td>15.</td>
<td>Cotton beaters</td>
<td>668</td>
</tr>
<tr>
<td>16.</td>
<td>Dyers</td>
<td>119</td>
</tr>
<tr>
<td>17.</td>
<td>Weavers of cloth of Tasar silk and cotton mixed houses, looms-90</td>
<td>60</td>
</tr>
<tr>
<td>18.</td>
<td>Cotton weavers, houses.</td>
<td>7025</td>
</tr>
<tr>
<td></td>
<td>Looms</td>
<td>7950</td>
</tr>
<tr>
<td>19.</td>
<td>Carpet weavers</td>
<td>30</td>
</tr>
<tr>
<td>20.</td>
<td>Blanket weavers</td>
<td>530</td>
</tr>
<tr>
<td>21.</td>
<td>Boilers for making nitre</td>
<td>75</td>
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</table>

Appendix VII

Buchanan’s Estimate of the number of Artists in the northern part of the District of Gorukhpooor

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paper makers</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Ink makers</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Atushbaz</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Chamars or shoe makers</td>
<td>1617</td>
</tr>
<tr>
<td>5</td>
<td>Distillers</td>
<td>753</td>
</tr>
<tr>
<td>6</td>
<td>Carpenters</td>
<td>1315</td>
</tr>
<tr>
<td>7</td>
<td>Blacksmiths and carpenters</td>
<td>114</td>
</tr>
<tr>
<td>8</td>
<td>Blacksmiths</td>
<td>1281</td>
</tr>
<tr>
<td>9</td>
<td>Kaseras</td>
<td>68</td>
</tr>
<tr>
<td>10</td>
<td>Thateras</td>
<td>70</td>
</tr>
<tr>
<td>11</td>
<td>Sonars (Goldsmith)</td>
<td>795</td>
</tr>
<tr>
<td>12</td>
<td>Kunghars or Potters</td>
<td>1273</td>
</tr>
<tr>
<td>13</td>
<td>Dhuniyas or cotton beaters</td>
<td>1536</td>
</tr>
<tr>
<td>14</td>
<td>Rungrez or Dyers</td>
<td>79</td>
</tr>
<tr>
<td>15</td>
<td>Jola weavers</td>
<td>3560</td>
</tr>
<tr>
<td>16</td>
<td>Dhunia weavers</td>
<td>81</td>
</tr>
<tr>
<td>17</td>
<td>Chamar weavers</td>
<td>1548</td>
</tr>
<tr>
<td>18</td>
<td>Blanket weavers</td>
<td>451</td>
</tr>
<tr>
<td>19</td>
<td>Sorahpuzs or Saltpetre makers</td>
<td>231</td>
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</tbody>
</table>

### Appendix VIII

**Estimate Explanatory of the manufacture of coarse cotton cloth in the District of Patna and Bihar**

<table>
<thead>
<tr>
<th>Division or Thanah</th>
<th>Number of weavers</th>
<th>Number of looms</th>
<th>Number of pieces which one loom weavers in a month</th>
<th>Kind of cloth</th>
<th>Size of the pieces</th>
<th>Value of one piece</th>
<th>Thread required for warp in 1 piece in Silk weight</th>
<th>Cost of the warp</th>
<th>Thread required for wool in S.W.</th>
<th>Cost of the wool</th>
<th>Total thread in Silk weight</th>
<th>Total value of thread required for one piece</th>
<th>Starch and soap</th>
<th>Profit by piece</th>
<th>Total profit in a month for each loom</th>
<th>Value of all the thread which is used by the weavers</th>
<th>Total value of cloth made annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patna city</td>
<td>1810</td>
<td>1892</td>
<td>600</td>
<td>Gajji Pagri</td>
<td>30 by 1½</td>
<td>500</td>
<td>18</td>
<td>50</td>
<td>90</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>12</td>
<td>68284</td>
<td>179424</td>
</tr>
<tr>
<td>Noubutpur</td>
<td>310</td>
<td>350</td>
<td>6½</td>
<td>Gajji</td>
<td>36½ by 1½</td>
<td>400</td>
<td>0</td>
<td>15½</td>
<td>-</td>
<td>-</td>
<td>110</td>
<td>0</td>
<td>0</td>
<td>4½</td>
<td>13.7</td>
<td>18768</td>
<td>26447</td>
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<tr>
<td>Bakipur Jaywar</td>
<td>490</td>
<td>550</td>
<td>4</td>
<td>Gajji</td>
<td>30 by 1½</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>90</td>
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<td>12</td>
<td>21400</td>
<td>39600</td>
</tr>
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<td>Sherpur</td>
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<td>5½</td>
<td>Gajji</td>
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<td>18</td>
<td>1</td>
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<td>2</td>
<td>144</td>
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<td>18</td>
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<td>1</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>63000</td>
<td>94500</td>
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<tr>
<td>Sheykh purah</td>
<td>1650</td>
<td>1950</td>
<td>5</td>
<td>Atharaegaji</td>
<td>40 by 2</td>
<td>800</td>
<td>2</td>
<td>8</td>
<td>56</td>
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<td>0</td>
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<td>160</td>
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<td>1000</td>
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<td>Gara</td>
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<td>0</td>
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<td>-</td>
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<td>---</td>
</tr>
<tr>
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<td>6000</td>
<td>5</td>
<td>Tangjeb</td>
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<td>800</td>
<td>2</td>
<td>0</td>
<td>55</td>
<td>0</td>
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<td>10</td>
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<td>2</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>202½</td>
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<td>6</td>
</tr>
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<td>700</td>
<td>6</td>
<td>Gajji</td>
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<td>-</td>
<td>0</td>
<td>14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>104</td>
<td>0</td>
<td>9</td>
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<tr>
<td>Jahanabad</td>
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<td>1200</td>
<td>3</td>
<td>Sologai</td>
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<td>850</td>
<td>3</td>
<td>0</td>
<td>104</td>
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<td>4</td>
<td>117</td>
<td>1</td>
<td>2</td>
<td>221</td>
<td>2</td>
<td>6</td>
</tr>
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<td>Daudnagar</td>
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<td>Char- khana</td>
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<td>8</td>
<td>45</td>
<td>0</td>
<td>12</td>
<td>45</td>
<td>0</td>
<td>14</td>
<td>90</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Arwal</td>
<td>560</td>
<td>700</td>
<td>4</td>
<td>Pata</td>
<td>30 by 1½</td>
<td>550 to 600</td>
<td>1</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>88</td>
<td>1</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Vikram</td>
<td>425</td>
<td>500</td>
<td>7</td>
<td>Gajji</td>
<td>45% by 1½</td>
<td>500</td>
<td>1</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>154</td>
<td>1</td>
<td>5</td>
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## Appendix IX

### Estimate of the manufacture of finer cotton cloth in the company’s factories of Maghra, Jahanabad and Bigha

<table>
<thead>
<tr>
<th>Factory</th>
<th>Kind of cloth</th>
<th>No. of pieces which loom weaves in a month</th>
<th>Size of the pieces (cubits)</th>
<th>No. of threads in the warp</th>
<th>Value of a piece</th>
<th>Thread required for warp in one piece in sicca weight</th>
<th>Cost of the warp</th>
<th>Thread required for wool in S.W.</th>
<th>Cost of the wool</th>
<th>Total thread in S.W.</th>
<th>Total value of thread required in one piece</th>
<th>Starch and soap</th>
<th>Profit by one piece</th>
<th>Total profit in a month for each loom</th>
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<td><strong>Maghra</strong></td>
<td>Amritiya naya rasi</td>
<td>2</td>
<td>36 by 1 10-16</td>
<td>1050</td>
<td>R 3 A 12</td>
<td>85</td>
<td>1</td>
<td>5</td>
<td>95</td>
<td>1</td>
<td>5%</td>
<td>180</td>
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<td>10%</td>
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<td></td>
<td>Amriti rasi</td>
<td>3</td>
<td>27 by 1 1/8</td>
<td>1000</td>
<td>R 2 A 10</td>
<td>60</td>
<td>0</td>
<td>14%</td>
<td>70</td>
<td>1</td>
<td>0</td>
<td>130</td>
<td>1</td>
<td>14%</td>
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<td></td>
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<td>2</td>
<td>36 by 2</td>
<td>1125</td>
<td>R 4 A 0</td>
<td>110</td>
<td>1</td>
<td>7.5</td>
<td>120</td>
<td>1</td>
<td>8</td>
<td>230</td>
<td>2</td>
<td>15%</td>
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<tr>
<td></td>
<td>Tangieb</td>
<td>2</td>
<td>36 by 2</td>
<td>1300</td>
<td>R 5 A 4</td>
<td>65</td>
<td>2</td>
<td>3</td>
<td>75</td>
<td>1</td>
<td>13</td>
<td>110</td>
<td>4</td>
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<td></td>
<td>Malmal</td>
<td>2</td>
<td>36 by 2</td>
<td>1200</td>
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<td>50</td>
<td>2</td>
<td>0</td>
<td>30</td>
<td>1</td>
<td>8</td>
<td>80</td>
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<td>Mahamudi maddham</td>
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<td>27 by 1 10-16</td>
<td>1200</td>
<td>R 3 A 6</td>
<td>55</td>
<td>1</td>
<td>3.5</td>
<td>65</td>
<td>1</td>
<td>5</td>
<td>120</td>
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<tr>
<td><strong>Bigha</strong></td>
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<td>-</td>
<td>27 by 2</td>
<td>2000</td>
<td>R 7 A 12</td>
<td>80</td>
<td>2</td>
<td>11%</td>
<td>80</td>
<td>3</td>
<td>3</td>
<td>160</td>
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<td>Salgachhi</td>
<td>-</td>
<td>27 by 2</td>
<td>1750</td>
<td>R 5 A 8</td>
<td>90</td>
<td>2</td>
<td>0</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>190</td>
<td>4</td>
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<td></td>
<td>Mehimahmudi</td>
<td>-</td>
<td>27 by 1 10-16</td>
<td>1500</td>
<td>R 4 A 8</td>
<td>80</td>
<td>1</td>
<td>9%</td>
<td>80</td>
<td>1</td>
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<td>160</td>
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<td>Amriti nayamehi</td>
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<td>1200</td>
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<td>120</td>
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<td>9%</td>
<td>130</td>
<td>1</td>
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<td>36 by 1 1/8</td>
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<td>110</td>
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<td>9</td>
<td>120</td>
<td>1</td>
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<td>230</td>
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<td>27 by 1 10-16</td>
<td>950</td>
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<td>1</td>
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<td>110</td>
<td>1</td>
<td>3%</td>
<td>210</td>
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<td>1%</td>
</tr>
<tr>
<td></td>
<td>Bafta chhita</td>
<td>-</td>
<td>25 by 2</td>
<td>1150</td>
<td>R 3 A 4</td>
<td>100</td>
<td>1</td>
<td>5%</td>
<td>115</td>
<td>1</td>
<td>4%</td>
<td>215</td>
<td>2</td>
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<td>Jahanabad</td>
<td>Mahamudi naya mehi</td>
<td>1</td>
<td>40 by 2</td>
<td>1900</td>
<td>11</td>
<td>0</td>
<td>120</td>
<td>4</td>
<td>4</td>
<td>130</td>
<td>4</td>
<td>4½</td>
<td>250</td>
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<td>1</td>
<td>Kanikas mehi</td>
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<td>48 by 2</td>
<td>1600</td>
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<td>12</td>
<td>200</td>
<td>3</td>
<td>14½</td>
<td>240</td>
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<td>12</td>
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<td>1100</td>
<td>4</td>
<td>2</td>
<td>170</td>
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<td>9½</td>
<td>190</td>
<td>1</td>
<td>10</td>
<td>360</td>
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<td>2</td>
<td>Gara</td>
<td>2</td>
<td>36 by 2½</td>
<td>1100</td>
<td>4</td>
<td>8</td>
<td>190</td>
<td>1</td>
<td>12½</td>
<td>210</td>
<td>1</td>
<td>1½</td>
<td>400</td>
<td>-</td>
</tr>
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<td>Amriti naya mehi</td>
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<td>36 by 1</td>
<td>1016</td>
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<td>13</td>
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<td>1</td>
<td>5</td>
<td>160</td>
<td>1</td>
<td>6</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Naya Bafta</td>
<td>3</td>
<td>27 by 2</td>
<td>1325</td>
<td>3</td>
<td>14</td>
<td>120</td>
<td>1</td>
<td>6½</td>
<td>140</td>
<td>1</td>
<td>7</td>
<td>260</td>
<td>-</td>
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<td>1½</td>
<td>Kanikas behar</td>
<td>1425</td>
<td>4</td>
<td>6</td>
<td>180</td>
<td>2</td>
<td>4</td>
<td>220</td>
<td>2</td>
<td>6½</td>
<td>400</td>
<td>-</td>
<td>4</td>
<td>10½</td>
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Source: Courtesy, Francis Buchanan, *Bihar and Patna, op.cit.*, p. 775 of Appendix
Map of India, c. 1900
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ankura</td>
<td>An iron hook</td>
</tr>
<tr>
<td>arhat</td>
<td>Persian wheel</td>
</tr>
<tr>
<td>asmani</td>
<td>Sky colour</td>
</tr>
<tr>
<td>atishbaz</td>
<td>Fireworks maker</td>
</tr>
<tr>
<td>aurang</td>
<td>Commercial centre</td>
</tr>
<tr>
<td>banjara</td>
<td>Tribe</td>
</tr>
<tr>
<td>barhai</td>
<td>Carpenter</td>
</tr>
<tr>
<td>bhathi</td>
<td>Bellows in eastern districts</td>
</tr>
<tr>
<td>bhishtis</td>
<td>A small occupational group who made mashaks/water carriers</td>
</tr>
<tr>
<td>but</td>
<td>European shoes</td>
</tr>
<tr>
<td>chak</td>
<td>Wheel uses by potter</td>
</tr>
<tr>
<td>chalni or chhalni</td>
<td>A stick for mixing up the dyes</td>
</tr>
<tr>
<td>chamar</td>
<td>Tanner</td>
</tr>
<tr>
<td>charas/charasa</td>
<td>The skin bag used for drawing water</td>
</tr>
<tr>
<td>charkha</td>
<td>Spinning wheel</td>
</tr>
<tr>
<td>char-khana</td>
<td>Cloth with coloured square lines, generally woven by ‘native weavers’ at Mau, Tanda, Faizabad and Ludhiana</td>
</tr>
<tr>
<td>chaukidar</td>
<td>Watchman</td>
</tr>
<tr>
<td>chhuri</td>
<td>Knife</td>
</tr>
<tr>
<td>chikan</td>
<td>The cloth on which needle work of the superior kind is done by the Moslem women of Lucknow</td>
</tr>
<tr>
<td>chimta</td>
<td>A pair of small tongs used for arranging the fire.</td>
</tr>
<tr>
<td>chint</td>
<td>Calicoes</td>
</tr>
<tr>
<td>churi</td>
<td>Glass-bangle</td>
</tr>
<tr>
<td>churihar</td>
<td>Glass-bangle maker</td>
</tr>
<tr>
<td>corah</td>
<td>Fresh</td>
</tr>
<tr>
<td>dadan</td>
<td>Advance to cultivators</td>
</tr>
</tbody>
</table>
dakhini Pagri  South Indian Turban
 darri/kallin  Carpet
 dhaukni  Bellows in western districts
 dhenkli  The liver used in raising water
 dhoti  The single sheet worn by women/men
 dhunia  Cotton carder
 durbh  Court
 ek-ranga  One colour
 gagara  A pot used for drawing water
 gararia  Blanket weaver
 golahs  Grain market
 gramina  where the ruler people lived in
 halal  killed as prescribed by Muslim religious law
 halwai  Confectioner
 huqqa  A pot of tobacco smoking
 jamdani  Resembling a cup (jam) and (dani) grains. As its name indicates it is used by females as their dharan (to be kept for use at grand occasion)
 jari  Gold thread
 jildsaz  Book binder
 jogi  Bhakti beggar
 julaha  Muslim weaver
 juta  Shoes
 kaghzi Mahalla  Paper colony
 kalchhul  An iron spoon
 kamdani  Fancy
 kammal  Blanket
 kangch  Glass
 kansaris  Manufacturers and sellers of brass, copper and bronze vessels
 kapas  Cotton
kapra/libas/poshak/luga or bastar
Clothes

karchob
Embroiderer uses the chob or wooden frame on which the work is stretched.

karkhana
Royal department under the Mughal court

karkhanadar
Owner of Karkhanas

kasera
Brass founder

kashmira
Woollen clothes, mixed with a certain amount of cotton threads or sometimes pure.

katuas
Traditional spinners

khaddar
Handwoven cotton

kimkhab
Silk cloth

kolhoo
Sugar mill

kumhar
Potter

kusami golabi
Pink colour

lapetan
Wooden roller behind which the weaver sits.

liohaf/razai/dulai
Stuffed quilt

lohar
Blacksmith

lungi
The cloth tied round the loins while bathing and used for drying the body afterwards.

mahar
Flayer

malimal
Very soft cloth to touch

markin
A cloth made of cotton and jute thread

mela
Festival

mochi
Shoe-maker

munda
A type of tribe live in Jharkhand and some parts of the Chhattisgarh region

murdari
As seen dead

muretha
A piece of ordinary cloth wound round the head.

nagar
Town

naksha
Map
nand Earthen pots
nil Indigo
nuniya A caste of Saltpetre manufacturers
pagri Turban
pargana A subdivision within a tahsil
phulkari Flowering work
qainchi a pair of scissors
qalaigar Tinman
qasba A urban centre often with an important industry.
ranga Solder
rangrez Dyer
rung Colour
ryot A kind of peasant in North India
sari Indian women’s dress
ser/chhatak A unit of measurement
shikargah Place of hunting
sonar Jeweller
sui A small needle
surahi An earthenpot for keeping water.
tanti Hindu weaver
tanzeb Body ornament chief of the fine cloths that are used by the gentry and the nobility of this country.
tahsil A subdivision within a district
tassar Wild silk
thana Police station
thathera Brazier
ustad Skilled master
vidalya School
vratas Associated with fasting performed by women
zardozi Hand embroider cloth/technique
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