

**INDIAN CRAFT-TECHNOLOGY: STATIC OR CHANGING
- A CASE STUDY OF THE KĀNSĀRI'S CRAFT IN BENGAL,
16TH TO 18TH CENTURIES**

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Conventional notion describes the Indian craft technology as something not responsive to market demand, hence unchanging. The stagnation in the technique of production has been attributed to the inhibiting influence of theology and the caste system. Widely used, this notion is based on the methodology of studying Indian craft technique from the view point of technological changes in the West. Using a different methodology, this paper seeks to re-examine this notion of stagnant craft technique in India.

Studied with reference to the *Kānsāri's* (brazier's) craft of Bengal, the second-most important craft of the province, the paper analyses the expansion of this craft since the 16th century, and examines the changes which took place in the *Kānsāri's* technique of production, forming the basis of their craft expansion since the late 16th century. These changes were mostly of two types: change in the composition of their alloy in response to the rising price of the metal, particularly copper and the evolution of a new tool, which eventually removed constraints to the growth of their craft.

Based on primary sources, the paper thus draws attention to an area, very little known so far. A special feature of this paper is that it studies the question of craft-technique from the view point of the artisan's own perception.

Key words: Craft-technique/technology, *Kānsāri* (brazier), *Kāmār*, (blacksmith), Craftsman/ artisan, Utensil, *Gāin* (sub-caste), *Āin*, *Charkā*, *Bhāran* (brass), *Chāchandār/Kudandār* (chiseller).

Craft technology in India has been generally described as simple and something not responsive to market demand, hence unchanging. Scholars rarely disagree that Indian technology was almost 'everywhere quite simple' characterised by the use of rudimentary implements; the point of disagreement is how far the technique of production was static. To Morris D Morris, it was static and backward,¹ while Tapan Raychaudhuri argued, '..... the pattern was not one of total stagnation, but rather of a general indifference to labour saving devices'.²

The unchanging character of the technique of production, repeatedly emphasised by others, has been generally attributed to the inhibiting influence of theology and the

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caste system. L.B. Alaev, studying non-agricultural production of medieval South India, thus stated that technological improvements were to a great extent checked by caste rules, which also fixed the methods of work.³ What followed, therefore, was the extreme rarity of 'inter-sectoral diffusion of tool techniques', according to Habib⁴ and technological stagnation' according to Gopal.⁵

Factors contributing to frequent repetition of such propositions are primarily two: the widely-followed methodology of interpreting Indian technology from the point of view of technological changes in the West and the extremely low level of documentation of similar changes in India. Most of the existing studies, based upon model of late eighteenth century England's transition to industrial take-off, thus consider the question of Indian technology as divorced from its extremely important 'realm of social choice'. Technological change is thus accepted here as a uniform process of growth with almost demonstrable changes at the higher levels of technology⁶ most often tend to ignore the slow transformations which took place in the working techniques of the craftsmen. These changes may appear trivial in isolation; nevertheless could indicate the extent of the diffusion of a mechanical principle, thereby collectively suggesting the society's preparedness for change.

The present paper seeks to re-examine, in brief, the existing notion of 'stagnation' in Indian craft technology with reference to brazier's (*Kānsāri's*) craft in Bengal. Like their fellow artisans in other parts of India, variously called the *Kāsāri*, *Kāserā*, *Thāṭerā*, *Tāmerā* or *Tambaṭ*, the *Kānsāri* constituted a distinct caste group traditionally engaged in the manufacturing of utensil from copper and its alloys.

The *Kānsāris* have been chosen for this study for two reasons: from a migratory craft in the late medieval period, the *Kānsāri's* craft eventually emerged as the second largest industry of Bengal in the early nineteenth century.⁷ Secondly, unlike many other industries, the technological basis of the remarkable growth of this industry could be clearly distinguished. The paper has two parts: Part I explains, in brief, the evolution of the *Kānsāri's* craft since the late medieval Bengal, followed by a discussion of the technological basis of this expansion in Part II.

I

Since copper, the basic metal of the brazier's craft, is not locally available in Bengal, the *Kānsāri's* craft seems to have its origin outside the province. If the availability of copper can be taken as a determinant, then the brazier's craft in eastern India seems to have flourished first in the Dhalbhum-Singhbhum region, where ancient remains of copper mining have been discovered. From this region, it had entered Bengal as a migratory craft, possibly through Bankura-Purulia-Midnapore trail, which was indeed the exit route of the metal to the copper port of Tāmralipta.

As a migratory craft, the utensil manufacturing in Bengal had its early growth in the western part of the province, related to the early development of metallurgical skill

in this region. The area had a local supply of iron which was indigenously processed even in early nineteenth century. The proximity of this region to Dhalbhum-Singhbhum, the source of copper, and its easier trade link with the agricultural plains of Bengal had actually encouraged its growth. A number of early medieval Sanskrit texts, written in this region, also refer to the *Kānsāris* as one of the thirty-six castes of Bengal. However, the lower rank ascribed to the *Kānsāris* in these texts indicates their peripheral existence as an artisan group at that time.⁸

The peripheral existence of the *Kānsāris* is quite logical in view of the extremely low range of metal goods produced in those days, as also the demand for them continued to be very limited for centuries. Because, metal utensils were expensive, hence not used by the poor. Even in well-to-do houses, their variety, if not number, was extremely limited. In fact, the minimal use of utensil and furniture had been often interpreted by foreign travellers in India as an index of the abject poverty of the people. Although it ignores the influence of social habits and environment in determining the consumption pattern, the limited demand for metal utensil in medieval times can hardly be denied.

In the later period, however, the condition of the *Kānsāris* began to change. What had been earlier a migratory craft, later on emerged as a flourishing industry. It is difficult to date this transition nevertheless the change in the nature of the Kansari's craft in the later period could be clearly distinguished.

Originally forming a sub-caste of the metal working caste of *Karmakār* or *Kāmār* (blacksmith), the *Kānsāris* in Bengal eventually hardened into a distinct caste. The separation of the *Kānsāris* from the metal-working caste cluster of the *Kāmārs* must have taken place in the context of the expansion of their craft. Significantly, this did not happen in the cases of the similar other metal-working groups like the *Ghāṭrā-Kāmār* or *Ḍokrā-Kāmār*, because, these crafts did not expand.

The growth of the utensil industry is also indicated by the emergence of a number of sub-groups among the *Kānsāris* in the later period. Originally clusters of artisans of the same occupation and caste, these sub-groups eventually emerged as corporate bodies of artisans, known variously as *gāins/thāks* or *bhāgas* in Bengal. These *gāins/thāks/bhāgs* have similarities with urban guilds of Europe in the sense that both had emerged out of attempts to cut down competition among the artisans as also to exclude outsiders from entering into their occupation. Yet they were widely different from one another. Unlike the European guild, the *gāin* was more a social unit than an economic organization of producers.

Significantly, all the *Kānsāri gāins* were of the territorial type. The word *gāin* had its origin in the Bengali word *gān* (village) or the place of residence in the larger sense. Each of these *Kānsāri gāins*, therefore, was originally associated with one of the important centres of its localization in pre-colonial Bengal. All the *Kānsāri gāins*, except perhaps one, were associated with urban centres and the process of this *gāin*

formation actually started with the emergence of Saptagrām as the foremost port and a thriving centre of trade and manufacture in medieval Bengal. The period from 16th to 18th centuries had been a remarkable period of urbanization in Bengal. Although not comparable to what happened in some other parts of India, a number of new urban centres came into prominence in Bengal, while others declined during this period.

With the rise and decline of these centres, a process of demographic restlessness continued, which affected the urban artisans most; the dispersal of their craft over a wide geographical areas took place. It was in course of their journey from one urban centre to the other that most of the *Kānsāri gāins* had emerged. At the end of the eighteenth century, therefore, the *Kānsāris* were divided into a number of sub-groups (*gāins*) - *Māhitā*, *Saptagrāmī*, *Māhmudpurī*., and etc. - territorial divisions related to different parts of Bengal. The existence of so many territorial sub-groups within a single group of artisans suggests that by the end of the 18th century and *Kānsāri's* craft had turned into a widely dispersed manufacturing activity in Bengal.

Following the expansion of their industry, a distinct group of the *Kānsāri* traders called *Kaṅsabaṅik* also emerged from among the rank of the *Kānsāri* artisans, encouraged by the increasing raw material requirement of the *Kānsāris* in the context of an expanding market demand for utensil. Once its local source failed to meet the growing demand, the *Kānsāri's* metals had to be brought from places as far off as Rajasthan, the western Himālayas, Kabul, China and the Straits Settlements through Surat. Importing these metals from such distant sources necessitated the participation of wealthy artisans, who eventually assumed the role of traders; buying and selling utensil produced by others.¹⁰

Such developments indicate the growth of the *Kānsāri's* industry in Bengal since the sixteenth century. There are other indications also. In the 1780s, B. Anand Ram had enumerated about fifty varieties of copper vessel, whose actual number was regarded by Hoey as legion.¹¹ In 1810, Buchanan tells us that one of the Dinajpur families possessed as many as seventy-six utensils of forty varieties; even a peasant family had as many as thirty-nine utensils.¹² Both the demand for the *Kānsāri's* utensil as well as the range of their products thus appear to have expanded considerably during the late pre-colonial period.

Another evidence of the expansion of the *Kānsāri's* craft is their upward social mobility as an artisan caste in Bengal, consequent upon the material prosperity achieved by them during this period. Since the lower ranks always try 'to relate their material achievements in the field of occupation and culture to a greater degree of ritual purity',¹³ the higher ritual status and social rank enjoyed by the *Kānsāris* in the early nineteenth century is clearly indicative of the growth of their industry in the preceding period.

On the whole it appears that there had been a considerable expansion of the *Kānsāri's* craft between the 16th and 18th centuries, thus changing it from a migratory

craft to a flourishing sedentary industry, which eventually emerged as the second-most extensive industry of the province in the nineteenth century. What was the technological basis of this craft expansion ?

II

In the context of an expanding market demand, three factors could help the pre-modern industrial production to expand: expansion of the workforce, availability of cheaper raw material and finally an improvement in the technique of production. These factors could act independently or could operate upon collectively to have produced the same result. Let us see which of these factors did actually help the expansion of the *Kānsāri*'s craft between 16th and 18th centuries.

In the earlier period, workforce expansion was perhaps the easiest method to increase the volume of production. In the mid-eighteenth century England, when the introduction of the Kay's flying shuttle increased the pace of weaving; early entrepreneurs tried to meet the consequent rise in demand for yarn, by recruiting larger and larger number of spinners with traditional spinning wheel.¹⁴ Similarly in India, the European demand for export of good-quality textiles in the late seventeenth century Coromandel, had forced the existing weavers (people of traditional weaving castes) to concentrate on the production of quality goods, while leaving the production of coarser fabrics to cheap labour usually recruited from 'non-weaver caste labour'.¹⁵ In Bengal too, a similar development led to the diffusion of weaving technique among non-weaver caste groups, thus leading to the emergence of different sub-castes among the *Tāntīs* (weavers) of Bengal.¹⁶

However, the absence of similar sub-castes among the *Kānsāris* indicates the non-induction of non-*Kānsāri* workers into the utensil industry of Bengal during the same period. It shows that the demand for labour in the utensil industry did not expand beyond the limit, the *Kānsāris* themselves could not meet.

Did the *Kānsāri*'s industry, under similar circumstances, expand due to the falling price of the brazier's metal ? The *Kānsāri*'s was a copper-based craft. In those days, copper was also used for artillery, coinage and ornaments for the poor people. Irfan Habib has shown that copper price remained fairly stable in India in the second half of the sixteenth century, only because 'copper currency was being replaced by silver. Once this process of replacement ended, copper prices in India rose rapidly' and the rising prices continued till the early eighteenth century, when the declining use of copper slightly improved the position.¹⁷ Since the requirement of copper for coinage or artillery was a state priority, the *Kānsāris* as a workgroup could have hardly hoped to buy copper cheap.

And this leads us to the question of the *Kānsāri*'s technique. In the absence of a significant expansion of the labour force and cheaper raw material, an improvement in

the technique of production, thus reducing the input cost of labour or raw material or both, must have helped the *Kānsāri*'s industry to expand. In early medieval Europe, the woollen industry had expanded with the introduction of the Pedal Loom and the Spinning wheel sometime in the twelfth century, leading to what is known as the 'pre-Industrial rise' of Medieval Europe.

Here, I would refer to only two examples to indicate the changes which took place in the *Kānsāri*'s craft technique sometime between the sixteenth and eighteenth centuries.

Example : One

With the rising prices of copper, the successive replacement of the costlier metal by its more workable and cheaper alloys represented perhaps the most remarkable of such technological changes.

In the *Āin-i-Ākbarī* (a late sixteenth century composition), Abul Fazl tells us that bell-metal (*Safid-ru*) known as *Kānsā* in Bengal was obtained by compounding four seers of copper with one seer of tin.¹⁸ A working formula (*Veej-mantra*) followed by the *Kānsāris* of the late eighteenth century Bengal,¹⁹ referred to the manufacturing of bell-metal in the copper-tin ratio of 3.5:1, compared to 4:1 of the *Āin*. The copper content of utensil in Bengal further declined in the later period; for instance, the Maldah braziers made utensil from an alloy of copper and tin in the ratio of 2.5 : 1 while those of Murshidabad used an alloy in the ratio of 1 : 1.²⁰ From 4 : 1, the copper-tin ratio during Abul Fazl's days, the copper content of bell-metal thus came down to 1 : 1 in the later period.

The progressively declining share of copper in bell-metal indicates that copper became dearer to other metals used by the *Kānsāris*, namely tin. A similar reduction also took place in the copper content of the brass (or *bharan / pital*) utensil in the later period. Abul Fazl recounts that different types of brass containing 28, 33 and 42 per cent zinc were manufactured in Mughal India.²¹ A nineteenth century evidence on the *Kānsāri*'s industry referred to two types of brass having 33 and 50 per cent zinc with copper.²² A comparison of the *Āin*'s evidence on the composition of other alloy used for utensil with the later evidence reveals the same interesting trend of a declining copper content. Thus, the *bhāṅgar* called *bharan* in Bengal, according to the *Āin*, contained copper and lead in the ratio of 8 : 3,²³ compared to 2 : 4 in the variety used by the Bengal braziers in the nineteenth century.²⁴

It appears, therefore, that the copper content of utensil declined in general since the *Āin*'s time. This was done quite deliberately to mitigate the adverse impact of the rising prices of copper on the growing demand of the metal ware. The copper content of utensil fell more sharply in the cases of cheaper wares (brass and *bharan* utensils) catering mainly to the poor people. It seems, in some cases, the *Kānsāris* did it deliberately to reduce the cost of the utensil, thus widening the demand for their wares more acceptable to the people at large.

It is striking to note that these changes were brought about by the *Kānsāri* artisans themselves without any help external to production organization. In fact, by reducing the share of copper in the alloy, the *Kānsāris* actually tried to add to the meagre wage they normally received from the traders. This and the use of different alloys in violation of the religious sanctions and caste taboo clearly indicate the *Kānsāri* artisan's awareness of the changing market conditions. For instance, the making of bronze utensil in particular was discouraged from the religious point of view, because it was liable to defilement by the touch of people not approved by caste.

With the declining share of copper, a gradual change in the nature of the *Kānsāri*'s mould also took place. With the gradual evolution of the *Kānsāri*'s craft from its early migratory stage, the design of his furnace must have also changed, although slowly. Since the *Kānsāri* continued to use the same fuel, the changing composition of his metal must have also necessitated different inputs of labour and fuel. And in some cases, this would have also involved some changes in the technique of casting of forging the utensil.

Example : Two

The second example relates to an improvement in the *Kānsāri* tool-technique. The *Kānsāri*'s utensil, made either by forging or casting, had to be scrubbed and chiselled before polishing, to be ready for sale. The scrubbing and chiselling of utensil was an extremely tedious and time-consuming process, requiring a high input of labour and time.

The gradual development of a drilling instrument, called *Charkā* by the *Kānsāris* of Bengal, greatly simplified this job. This was a horizontally fixed medium-sized lathe. The unfinished utensil was at first fixed to the broad end of the drill, using a composition of lac and resin. One man pulling a rope with both hands, used to give a reciprocating rotary motion to the axle of the drill, while another skilled labour, called *Chāchandār*, (scrubber) scrubbed the utensil using different types of chisels. (See Fig.1)

Essentially, this drill was based on the principle of belt drive and probably received it through the spinning wheel, which made the earliest use of this principle in India.²⁵ The man who operated this lathe was known as *Charkāsh* (literally spinner) in northern India²⁶ suggesting the early link of this instrument with *Charkā* or the spinning wheel.

The early origin of this instrument from the spinning wheel would be clear if we look at the lathe used by the Madras braziers. The Madras lathe is, in fact, a much larger version of the *Charkā* (lathe) of the *Kānsāris* of Bengal. In Madras, the operator holding a crank handle drives a large wheel about the size of a cart wheel, while the rope connecting the wheel and passing round the shaft of the lathe communicates a continuous rotary motion to the lathe (unlike the reciprocating rotary motion of the *Charkā* used by the *Kānsāris* of Bengal). (See Fig. 2)²⁷

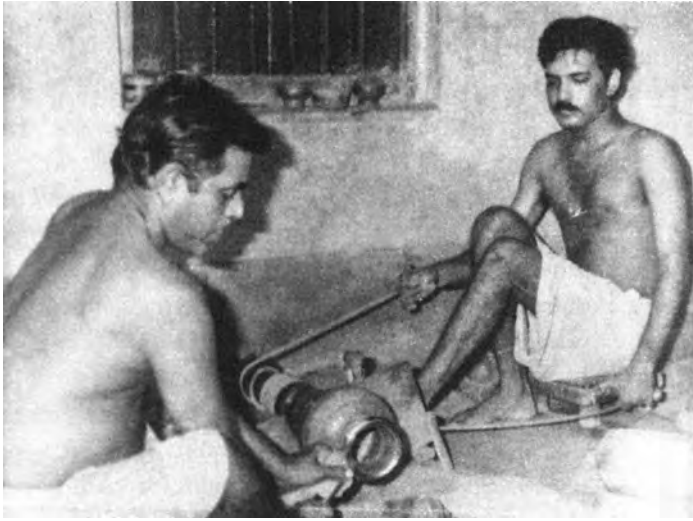


Fig. 1

(Courtesy : Jan Brouwer, *The Makers of the World*, Oxford University Press, Delhi, 1995, p.71)



Fig. 2

(Courtesy : Jan Brouwer, *The Makers of the World*, Oxford University Press, Delhi, 1995, p.71)

The earliest reference to the spinning wheel in India is firmly dated at 1350 AD.²⁸ The lathe (*Charkā*), used by the *Kānsāris* of Bengal, must have been developed at a much later date. The only other method, used to rotate drills in India since ancient times, namely the bow string, could not be used by the braziers. Since he worked on a hard alloy, the brazier needed a horizontally-fixed drill, also a larger and a more powerful one. Unlike the traditional jeweller, blacksmith and carpenter the brazier could not, therefore, use the bow-string drill. It seems, the utensil industry at its early stages did not have the use of a drill as such.

The traditional identification of the scrubbing and chiselling jobs with two distinct workers - *Chāchandār* (scrubber) and *Kudandār* (chiseller) respectively - seems to suggest that in earlier times utensils were manually scrubbed and chiselled without the aid of any drill. Not only this was a time-consuming process, but also difficult for using hard alloys of brass (particularly its later variation) and bell-metal. The manual scrubbing and chiselling was, therefore, a major obstacle to the growth of the *Kānsāri's* industry, particularly in the context of its rapidly expanding demand since the late seventeenth century.²⁹ All these explain the gradual development of the *Kānsāri's* drill/lathe, slow and unnoticed perhaps, sometime after the seventeenth century, when the belt-drive technique spread to some other Indian industries.³⁰

This is a clear evidence of the inter sectoral diffusion of an important technological device - an evidence which refutes the existing notion of the rarity of such diffusion.³¹ Examples cited above clearly indicate that the braziers of Bengal continuously tried to upgrade their techniques to suit their production requirements.

CONCLUSION

On the basis of these findings, I would like to conclude that the conventional notions of the unchanging or stagnant and backward Indian craft technology are much too simplistic. The reasons for the frequent repetitions of such interpretations are primarily two : absence of in-depth studies of Indian artisanal industries and the Euro-centric notion of technological change, which prejudice such studies.

The case of the *Kansari's* industry clearly suggests that technology in Indian artisanal industries did change in response to market demand. If such changes appear rather timid and slow, it was because a radical transformation of the technique of production was never a pressing and unavoidable need in India. The particular social situation also has an important role in the slow transformation of the craft technology. However, the important question of 'social realm' remains beyond the scope of this paper.

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