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Cotton to Cloth: An Indian Epic

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The cotton handloom industry of India is one of the great manufacturing institutions of the world: its looms have run continuously for five thousand years. Remnants of cotton thread have been found in the ruins of the Harappan civilization [5000-3500 BC], and the weavers of India have supplied the markets of the world with cotton cloth since at least the first century of the Christian era. The golden age of Indian cotton in recorded history stretches from that time until the beginning of the nineteenth century and there are testaments to the quantity, quality and variety of Indian cotton fabrics scattered through written records. Indian textiles were traded for Roman gold at the time of the Roman Empire; Pliny, the Roman historian of the 1st century AD, calculates the value of imports of Indian fabrics to Rome at a hundred million sesterces [equal at the time to 15 million Indian rupees] every year, and complains that India is draining Rome of her gold. Suleiman, an Arab trader who visits Calicut in 851 A.D writes in his diary “...garments are made in so extraordinary a manner that nowhere else are the like to be seen. These garments are wove to that degree of fineness that they may be drawn through a ring of middling size.”¹ Tome Pires, a Portugese traveler of the 16th century writes in 1515 from Malacca describing the ships that come there from Gujarat and the Coromandel coast, worth eighty to ninety thousand cruzados, carrying cloth of thirty different sorts.² Pyrad de Laval in the early 17th century says Indian fabrics clothed “everyone from the Cape of Good Hope to China, man and woman...from head to foot.”³ Certainly the largest manufactured trade item in the world in pre-industrial times, Indian cotton cloth, paid for in gold and silver, was the source of India’s fabled wealth.

The thriving export trade in cotton textiles was built on the base of domestic industry. Cotton was grown and cloth woven for export as well as for local use in weaving regions throughout the country, each making its own distinctive product. Fine textiles were woven for the nobility, ordinary home-spun for common people. The rich had many fine garments, the finer the more costly. The emperor Aurangzeb (1618-1717) is said to have chided his daughter for being improperly dressed, to which she replied that she had on seven jamas or suits.⁴ The common people on the other hand dressed in coarse undyed cloth, as the descriptions of early European travellers and the sketches of European artists show.⁵

Indian cloth was ‘in demand from China to the Mediterranean’⁶ and trade in Indian cotton fabrics had been carried on for centuries by Armenian, Arab and Indian traders until, from the early seventeenth century, the large European trading companies began to dominate the region’s textile, spice and slave trade, ensuring control of supply through forcible conquest of producing regions. Portuguese, Dutch, French and English trading companies seized territories in Thailand, Malaysia, Indonesia, China and India.

¹ Sir George Watt, *The Wild & Cultivated Cotton Plants of the World*, 1907 (New Delhi: Sagar Book House, 1989).

² Mattiebelle Gittinger, *Master Dyers to the World* (Washington: Textile Museum, 1982).

³ *Ibid.*

⁴ Yule & Burnell, *Hobson-Jobson* (London: John Murray, 1903).

⁵ See for example the early 19th century engravings of Rudolph Ackermann, Balthazar Solvyns and others.

⁶ John Guy, *Woven Cargoes* (New York: Thames & Hudson, 1998).



Figure 1. Women Weavers, Andhra Pradesh. Photo: Uzamma.

In 1600 the British East India Company was granted a Royal Charter for exclusive rights to Britain's trade with India. Textile exports from India, for which the demand in Europe seemed to be insatiable, made up the bulk of its trade. In 1682 the port of Surat on the West coast alone exported 1,436,000 pieces and the total for the whole of India came to more than 3 million pieces – each piece being about 18 yards in length.⁷ The cloth was of different descriptions, most of it cotton of a variety of weaves and weights, dyed, printed and plain, for both garments and drapery. Ship's musters of the seventeenth and eighteenth centuries speak of thirty to forty different sorts of cotton fabrics, each with a name: bafta, mulmul, mashru, jamdani, moree, percale, nainsukh, chintz, etc, all paid for in bullion: in 4 years alone between 1681 and 1685 the East India Company imported 240 tonnes of silver and 7 tonnes of gold⁸ into India. During the 17th century so much Indian cotton was imported into England that the English woollen handweaving industry suffered and declined. English weavers protested, and eventually at the end of the 18th century England loaded a duty of 75% onto Indian cotton imports.

The East India Company, beginning as a trader carrying finished cotton textiles from India, soon transformed itself into a colonial power. It proceeded through a series of wars and treaties with local rulers to establish itself as the ruler of large parts of the country and extractor of revenue through taxation. At the time when it began operations cotton in India was almost entirely grown for the domestic weaving industry, which 'is, and has been for ages past, enormous.'⁹ This massive textile manufacturing industry worked through a smooth and well-established chain of exchange and processing between the peasant cultivator, the local market, itinerant carders, domestic spinners and home-based weaver families. Under Company rule the chain was disrupted. The peasant cultivator, who had under Mughal rule paid a maximum of 25% of his annual income in taxes, now became the source of land revenue for the Company and

⁷ Nick Robins, *The Corporation that Changed the World*, (Hyderabad: Orient Longman, 2006).

⁸ John Keay, *The Honourable Company*, (London: Harper Collins, 1993).

⁹ *Report from the Select Committee on the Growth of Cotton in India*, (London:1848).



Figure 2. Bobbin winding, Andhra Pradesh. Photo: Pankaj Sekhsaria.

had to pay a much larger proportion, varying from 40 to 50%. Besides, cloth making was taxed again at different stages:

*The story of cotton in India is not half told," writes Francis Carnac Brown, a British cotton planter in the Malabar region of India, "how it was systematically depressed from the earliest date that American cotton came into competition with it about the year 1786, how for 40 or 50 years after, one half of the crop was taken in kind as revenue, the other half by the sovereign merchant at a price much below the market price of the day which was habitually kept down for the purpose, how the cotton farmer's plough and bullocks were taxed, the Churkha taxed, the bow taxed and the loom taxed; how inland custom houses were posted in and around every village on passing which cotton on its way to the Coast was stopped and like every other produce taxed afresh; how it paid export duty both in a raw state and in every shape of yarn, of thread, cloth or handkerchief, in which it was possible to manufacture it; how the dyer was taxed and the dyed cloth taxed, plain in the loom, taxed a second time in the dye vats, how Indian piece goods were loaded in England with a prohibitory duty and English piece goods were imported into India at an ad valorem duty of 2 ½ per cent. It is my firm conviction that the same treatment would long since have converted any of the finest countries in Europe into wilderness. But the Sun has continued to give forth to India its vast vivifying rays, the Heavens to pour down upon the vast surface its tropical rains. These perennial gifts of the Universal Father it has not been possible to tax.*¹⁰

Oppressive taxation by the Company accompanied export of raw cotton and import of finished products, at first yarn and later, cloth. This combination had the effect of reversing the traditional trade flow; India which for centuries had been a net exporter of cotton textiles, gradually became an importer. First came the import of yarn. One immediate effect this had was of taking away the occupation of millions of women spinners in this country. Until colonial times, the yarn for handloom weaving in India had traditionally been spun by hand. Millions of women spun at home, the richer ones as a leisure pastime, the poorer ones to earn a living. With the invention of spinning machinery in Britain and the import of machine-spun cotton yarn this occupation vanished. This letter, from the 1820s, was printed in a Bengali paper Samachar

¹⁰ Proceedings of the Madras Board of Revenue no 407 dated April 9, 1862, quoted in Ratnam, *Agricultural Development in Madras State prior to 1900*, (Madras: New Century Book House, 1966).

Darpan, translated into English and re-printed a hundred years later in Gandhi's *Young India* illustrates the effect of the imports:

To the Editor, The Samachar,

*I am a spinner. After having suffered a great deal, I am writing this letter ...I have heard that, if it is published, it will reach those who may lighten my distress and fulfil my desire...When my age was five and a half gandas (22) I became a widow with three daughters. My husband left nothing at the time of his death wherewith to maintain my old father-and mother-in-law and three daughters.I sold my jewellery for his shraddha ceremony. At last as we were on the verge of starvation God showed me a way by which we could save ourselves. I began to spin on takli and charkha. In the morning I used to do the usual work of cleaning the house and then sit at the charkha till noon, and after cooking and feeding the old parents and daughters I would have my fill and sit spinning fine yarn on the takli. Thus I used to spin about a tola. The weavers used to visit our houses and buy the charkha yarn at three tolas per rupee. Whatever amount I wanted as advance from the weavers, I could get for the asking. This saved us from cares about food and cloth. In a few years' time I got together seven ganda rupees (Rs28). With this I married one daughter. And in the same way all three daughters. There was no departure from caste customs. Nobody looked down upon these daughters because I gave all concerned ..what was due to them. When my father-in-law died I spent eleven ganda rupees (Rs 44) on his shraddha. This money was lent me by the weavers which I repaid in a year and a half. And all this through the grace of the charkha. Now for 3 years we two women, mother-in-law and I, are in want of food. The weavers do not call at the house for buying yarn. Not only this, if the yarn is sent to the market, it is not sold even at one-fourth the old prices. I do not know how it happened. I asked many about it. They say that bilati (foreign) yarn is being largely imported. The weavers buy that yarn and weave. I had a sense of pride that bilati yarn could not be equal to my yarn, but when I got bilati yarn I saw that it was better than my yarn. I heard that its price is Rs 3 or Rs 4 per seer. I beat my brow and said, 'Oh God, there are sisters more distressed even than I. I had thought that all men of Bilat were rich, but now I see that there are women there who are poorer than I'. I fully realize the poverty which induced those poor women to spin. They have sent the product of so much toil out here because they could not sell it there. It would have been something if it were sold here at good prices. But it has brought our ruin only. Men cannot use the cloth out of this yarn even for two months; it rots away. I therefore entreat the spinners over there that, if they will consider this representation, they will be able to judge whether it is fair to send yarn here or not.*¹¹

Britain saw India as a supplier of raw materials and a market for its manufactures. Machine-woven cotton fabrics were brought into the country, while cotton was shipped out to supply its own industry. But there was a problem: Though Indian cotton, *Gossypium arboreum*, had produced the finest fabrics the world has yet seen, the famous Dhaka muslins, it was unsuited to the newly invented textile machinery, which was designed for the cotton of America. 'I have no doubt that the fine cotton produced near Dacca is one cause of the superiority of the manufacture', writes Dr.Hamilton in 1828, 'nor do I think that any American cotton is so fine, but then there can be no doubt that the American kinds have a longer filament and on that account are more fitted for European machinery.'¹² That is to say, American cotton varieties, *Gossypium hirsutum*, produced a longer, stronger staple, more fitted to the rigours of machine processing. Since America had declared itself independent it could no longer be relied on as a supplier of cotton, and so the East India Company set about 'improving' Indian cotton, which meant making it more suited to the machine. 'The American plant grown in India produce[s] a staple longer, and therefore better calculated for the European manufacturer.'¹³

Before the Company's intervention, local cotton varieties had been closely adapted to Indian textile technology, producing cotton fabrics of a staggering diversity that were durable, strong,

¹¹ M K Gandhi, *Young India 21-5-1931*, reprinted in *Economics of Khadi*, (Ahmedabad: Navjivan Press, 1941).

¹² Sir George Watt, *The Wild & Cultivated Cotton Plants of the World*, 1907, reprinted: (New Delhi: Sagar Book House, 1989).

¹³ *Report from the Select Committee on the Growth of Cotton in India*, (London: 1848).

soft, light in weight, absorbent, washable, and that were capable of holding colour permanently. Native Indian varieties were grown without irrigation on rain-fed soils, intercropped with the local food crops. They fruited over a long period, and so could be picked by family labour. In other words, they were suited to an economy of dispersed rather than mass production. The new British machines on the other hand were the heralds of the era of mass-production, and they needed uniform raw materials in large quantities, and the need to grow cotton to supply those machines rather than for the local textile industry completely transformed cotton cultivation in India. This was the critical point when the hundreds of varieties of Indian cotton which had been bred over centuries to supply the hundreds of weaving regions, now had to produce instead a uniform supply. Diversity which had until then been valued, now became a handicap.

The East India Company began to research into ways to increase the quantity of cotton for export, and its suitability for the spinning machinery, replacing the centuries old Indian varieties with American. Obviously this research benefited the Company and the English textile manufacturers, neither of whom cared about preserving Indian textile traditions, or the welfare of Indian farmers or weavers. In fact they saw the Indian weaver as a competitor for the supply of cotton and the Indian farmer as inefficient, because he was unwilling to fit into the new trade-dominated industrial pattern. They knew that Indian cotton produced much less per acre than the American, and they felt the fault lay in the ignorance of the Indian farmer of better varieties and better agricultural practices. They decided to bring American cotton planters to India to teach Indians how to grow cotton, about which John Sullivan of the Madras Revenue Board had this to say: 'when the cotton fabrics of India had been carried to the highest perfection centuries and centuries before the cotton plant was known in America, it seems odd that we should be thinking now of importing people from America to teach the people of India how to cultivate, clean and collect their cotton.'¹⁴



Figure 3. Mending warp threads. Photo: Uzramma.

But the Company went ahead. In 1840 it employed ten American cotton planters to demonstrate American style cotton growing in India. Three of these planters were sent to

¹⁴ *Report from the Select Committee on the Growth of Cotton in India*, (London: 1848).

Coimbatore and given land and all the help they needed. They were supervised by Dr Wight, who at the same time gave the American seed to the Indian ryots and bought back the cotton produced. The experiment went on for 13 years. In 1861 Wight reported:

In three years the American planters had completely exhausted the fertility of the soil by cropping it with cotton year after year.

In the fourth and fifth year the crop was not worth gathering.

At the end of the fifth year, the planters retired from the field altogether, confessing candidly that they could not compete with the Coimbatore farmers.

American planters were beaten out in three years. 'The Coimbatore ryots at the end of the thirteenth year of trials produced from American seed of their own raising a cotton crop as good and as abundant as was produced by the planters in the first year, and this cotton was produced at half the cost of the Americans.'¹⁵

The damaging effect of substituting American for native varieties was recognized by the well-informed. George Watt, the botanical advisor to the Government was categorical:

*It might almost be said that progression is deliberately stultified, the labours of centuries ruthlessly thrown away, and a large and important industry practically cornered or restricted in its possible development by interested parties.. since the existing traffic is aimed at the destruction of all the good features of the indigenous fibre.*¹⁶

In 1947 India regained its independence, but by this time mass production was synonymous with modernity and India's own spinning and weaving mills took over the role of Lancashire in the textile industry. It was taken for granted that research into cotton varieties would continue to develop cotton for the mills, making sure that the cotton plant kept pace with the development of the machines. American cotton varieties and their hybrids gradually replaced the native ones, so that at present the native varieties grow only in a few pockets.

Cotton in India is grown largely by small farmers, and the new practices have changed the nature of farm practices from sustainable family based agriculture to intensive commercial farming with severe and tragic consequences. Seeds come from large multinationals rather the farmer's own stock, and are expensive. While the local varieties were rain-fed, the new varieties need irrigation, which increases humidity. Humidity in turn encourages pests and fungus. A cocktail of chemicals – fertilizer, pesticide¹⁷ and fungicide is used which adds to the cost of cultivation, but does not guarantee a good harvest. The farmer runs up huge debts hoping for a good crop, but India's weather is variable, ground water is fast depleting and if the crop fails the risks are entirely the farmer's. The distress of the cotton farmer leads to numbers of suicides; in 2004 in the state of Andhra Pradesh alone almost 600 farmers, the majority of them cotton growers, ended their lives.¹⁸ Lately the introduction of genetically modified seeds has led to even more severe problems in cotton growing areas of Maharashtra and Andhra Pradesh.

Not only cotton farmers but handloom weavers too are in trouble, and a large part of their problem is related to cotton yarn. Hand weaving in India today is a livelihood for a large section of the population, particularly in villages. Over 6 million square yards of textiles – 16% of

¹⁵ C Shambu Prasad, *Suicide Deaths and Quality of Indian Cotton*, Economic & Political Weekly, January 30, 1999.

¹⁶ Sir George Watt, *The Wild & Cultivated Cotton Plants of the World*, 1907, *reprinted*: (New Delhi: Sagar Book House, 1989).

¹⁷ Cotton which is grown on about 5% of the cultivated land accounts for 55% of all the pesticide used in India.

¹⁸ Andhra Pradesh Rythu Sangam, 2005.

India's textile output - were produced on hand looms last year [04-05]. There are six and a half million weaving families, besides whom there are an equal number occupied in ancillary trades connected with the industry – dyers, warpers, sizers, bobbin-winders, and tool makers. Yet this enormously significant and productive sector does not get yarn specifically suited to it, but is treated as a poor relation of the mill textile industry, and has to use mill-spun yarn, which puts handwoven textiles at a disadvantage in terms of quality. Handwoven fabrics can compete in the market only on their quality, not their price. The Indian weaver's skills need to be underpinned by suitable yarn to carry through into fabric the important characteristics of cotton.



Figure 4. Rolling up sized warp. Photo: Uzramma.

The technology in use in contemporary spinning mills is a centralized, capital and energy intensive technology ill-suited to the operating conditions in India where cotton is grown by millions of farmers on small farms and yarn in turn is woven mostly (over 90%) by dispersed handlooms and powerlooms. Because spinning machinery has high capacities, only large quantities are economical to spin, so farmers are required to grow uniform varieties of cotton. The overheads of transporting cotton to the mills and yarn to the weavers add to the costs. On the weavers' side, small quantities of different types of yarn are needed, which are difficult for large mills to supply.

When cotton began to be exported not only the growing but also the handling changed. For local use cotton was carried in loose sacks, but these obviously were not suited to transport overseas. Steam presses were introduced to compress the loose cotton into bales, squeezing the soft fibres into a dense mass of the consistency of wood, pressing trash – bits of leaf, seed-coat and dirt - more firmly into it. Now baling is taken to be an essential part of cotton processing even if both cotton growers and spinning mills are located within miles of each other.

Today spinning mills in India use only baled cotton. The bales are torn open by spiked metal wheels and the loosened cotton blown apart by force in the blow-room to separate the fibres before the cotton is cleaned and carded. By the time it has gone through these processes the cotton is limp and lifeless and has lost the springiness that would otherwise give cotton fabric a wonderful drape and feel. The yarn made on these machines is strong enough for machine

weaving, but with its tighter twist is over-spun for handlooms, and has also lost some of its durability, absorbency and colour holding capacity, all the desirable natural qualities of cotton which can be retained through gentle processing and hand-weaving.

Dastkar Andhra, Hyderabad, is a not-for-profit independent Trust, whose objective is to reaffirm the vitality of household production of cotton textiles as an economic activity in the contemporary context. The Trust provides consultancy services to artisan industries to contemporize their organizational structures and market linkages, making use of new technologies where it suits them, while retaining and reinforcing the strengths of traditional skills. Dastkar, in collaboration with handloom weaving co-operatives, develops systems for effective linkages between dispersed production and the market and researches technologies both traditional and modern, that would buttress the strengths of the cotton handweaving industry.



Figure 5. The cradle on the loom. Photo: Pankaj Sekhsaria.

Dastkar Andhra and Vortex Engineering, Chennai, are collaborating in a research project to design and manufacture a set of machines that uses fresh cotton straight from the fields, eliminating some steps between ginning and spinning - baling, transport of bales, blow-room - and simplifying carding. These machines are capable of spinning small lots of cotton of highly variable quality, suited to meeting the differing yarn needs of unstandardized looms. They free the cotton farmer from the tyranny of demands by ever faster spinning machinery, needing cotton of longer & stronger staple, unsuited to being grown in Indian conditions. They can supply handloom weavers with yarn made from local cottons. With these machines it will be possible to link cotton growing to hand-weaving in the many hundreds of villages in India where both co-exist. This is our vision, of a way of regaining the diversity and variety that were the hallmarks of India's ancient textile tradition. At present we have one pilot unit working, processing about 25 kg of ginned cotton in each 8-hour shift into sliver, which is then distributed to domestic spinners operating small motorized ring-frames. Once the yarn is spun it is woven on hand looms into a soft, durable, absorbent, medium weight cloth called 'malkha' with excellent draping and dye-holding properties.

Some say that as energy from steam, oil and electricity ushered in the era of mass production in the 19th century, it will be clean, renewable energy that will take dispersed production industries to the top of the heap in the 21st. As the stock of fossil fuels comes to an end notions of efficiency will change and low-energy manufacturing processes will gain in value. At the same time markets are becoming saturated with the look-alike products of factory production, and there are more and more customers for the individualized products that dispersed production can offer. In this situation household manufacture of cotton textiles in India, particularly if it can use yarn made from cotton fresh from the field, looks as if it will have the last laugh over mass production after all.