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The Resistant Fibre: The Pre-modern History of Cotton in China^{*}

Introduction

Cotton (mian or mumian, in Chinese) is not a plant native to China, although it had been grown in peripheral regions surrounding the empire for centuries before the common era (BCE). There is at least one reference in the Hou Hanshu (The dynastic history of the later Han [CE 25-220]era) that the Lao-ai tribe in the southwest border region produced good-quality cotton cloth (Deng:377). Even earlier, around 200 BCE, official documents recorded the existence of cotton cloth in what is now Yunnan. Recent archaeological research on mummies found in the Tarim Basin has also uncovered cotton textiles, dating from the first millennium BCE, whose origin may be traced to India (Mallory and Mair:212). But even within China itself, already in the early Han dynasty (circa 100 BCE), local weavers based in Sichuan in western China were known for the fine cotton cloth they produced (Chao:10).

Such written and archaeological evidence suggests that the early history of cotton cultivation and textile processing in China falls under what one historian has termed 'southernization', i.e. the multi-faceted process by which crops such as sugar and cotton, and the development of various related technologies, spread from southern Asia (what is now India) elsewhere (Shaffer 1994; 2003). The 'southernization' of cotton to China involved in fact two species of the plant: (1) the African-Asian species (*Gossypium herbaceum*) which followed a northern route overland from Central Asia to China's Gansu and Shanxi provinces (the Silk Route, in reverse); (2) the South Asian species (*Gossypium arboreum* and *Gossypium hardense*) which travelled a southern course overseas from India (east Bengal and Assam) to Burma, Vietnam, and on to Hainan Island,

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Yunnan, Guangxi, and Guangdong in China (Deng:377). In other terminology, one may situate this initial phase of the history of cotton cultivation and textile production in China as part of 'proto-globalization', the earliest stage of global integration (cf. Waley-Cohen; Hopkins; Osterhammel/Petersson).

In any event, the second species of cotton was certainly grown in what are now Guangdong and Fujian provinces around the ninth century (Schafer:205). But this region, with its high humidity, was in effect unsuitable for textile manufacture. Only after its cultivation spread northward, into non-tropical zones of the lower Yangzi valley sometime by the twelfth century, did cotton growing and textile production become truly established. The history of cotton in China, from exotic commodity to a universally available material displacing less satisfactory ones (ramie, hemp, or bark cloth), is one of social and economic transformation. In this short paper, we will trace three aspects of this metamorphosis until the eighteenth century: (1) the role of government prerogatives; (2) economic turning points; (3) the social organization of textile production.

The Early History of Cotton Cultivation and Textile Production: The Role of Government Authority and Institutionalization

The greatest obstacle to the spread of cotton in China before the second millennium was the silk lobby. According to the leading historian of Chinese cotton Kang Chao (Gang Zhao), the influential and powerful silk industry situated in Xi'an, at the beginning point of the Silk Route, effectively barred cotton from infiltrating Chinese textile production in northern China (Chao:7). Given Xi'an's status as capital of China over the centuries, it seems logical that the silk industry's interests were closely linked to those of government authorities. The extent of such influence may also account for the ability of the silk industry controllers in Sichuan to form a comparative blockade against any penetration into its markets (Chao:10-11).

Before the Song era (960-1279) there were two reasons for government aversion to cotton (Cartier). First, as vestimentary regulations were based on the distinction between silk and hemp, the latter of which was worn by the majority of inhabitants, successive dynastic governments from

the first through ninth centuries regarded the wearing of cotton garments a threat to the preservation of social status markers. Second, as cloth (both silk and hemp) had monetary use in the payment of taxes, the financial authorities viewed cotton as a potential complicating hindrance to the fiscal regime. Thus, it was only during the waning years of the Tang dynasty (circa ninth century) when the central government's available revenues in silk cloth was so greatly reduced through loss of authority over silk-producing regions (Twitchett), that the position of cotton in China changed.

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The spread of cotton cultivation, first into the lower Yangzi valley, and then elsewhere in China took several hundred years. Once again, government interest was crucial. Already in the early Song period, cotton (of the perennial variety) had become a commercialized crop in Fujian (So:31;71;73); the quantity of cloth produced here was sufficient to supply the government's annual quota of 5000 bolts as part of this region's 'tribute' sent to the Song court (So:79-80). The development of this perennial into an annual facilitated its diffusion northward where it would grow in a wide range of soils and climates. The Song government's initiatives to open and reclaim the 'land south of the Yangzi' (Jiangan) had brought vast amounts of land under cultivation, and taxation. While farmers grew rice in Jiangnan's extensive irrigable flat lands, they began to cultivate cotton in the region's higher, drier, and sandy-soil uplands. By the late Song-early Yuan period (circa 1270-1300), cotton cultivation extended from the Guangdong-Fujian area to the lower Yangzi region, to the Huai River basin, Sichuan and Shaanxi areas (Nishijima:19). In its waning days, the Song state issued an agricultural handbook, *Nongsang jiyao* (Fundamentals of agriculture and sericulture; 1273), in which the details of cotton cultivation were also explicated. The diffusion of the cotton plant was also supported by the successor Mongol Yuan government; it established in various provinces around the lower and middle Yangzi regions bureaus to provide technical information and encouragement to local farmers to grow cotton. Finally, the Yuan government in 1296, following the first initiative of Song policy, incorporated cotton into the tax system at various favorable rates to encourage its cultivation to an even greater extent (Bray:213).

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As for cotton textile production, the weaving process was no problem since traditional looms proved adequate. What might have become a bottleneck to the development of cloth making were the problems of ginning and carding: "before the end of the thirteenth century the Chinese did not have efficient techniques for cleaning the raw cotton, preparing rovings and spinning them into yarn" (Bray:215). The solution was found, according to a well-known legend, when a Daoist nun Huang Daopo (b.1245?--?) returned from Hainan island to her native village Wunijing in Songjiang prefecture (near modern-day Shanghai) and introduced the cotton gin which eliminated the seeds from the cotton plant. She is also credited with communicating "the multiple-spindle treadle-operated wheel, which allowed one woman to spin several threads simultaneously" (Bray 215; cf.Kuhn:212).

The greatest demand for cotton cloth came from the Mongol armies stationed in the northern regions; they needed uniforms made of some kind of warm, light-weight and resilient material. In the course of their conquests and movements through Central, West, and South Asia, the Mongols must have perceived the value of cotton textiles: cotton cloth's strength, durability, and effectiveness as a padded fabric against winter chill, or as a light, absorbent textile against summer heat. Archaeological discoveries in Xinjiang have revealed the inner linings of Mongol army uniforms, underwear, pants, and inner jackets were all made of cotton cloth (Chao:19). The 'Pax Mongolica' may not have transformed global political and cultural institutions in the long run (Osterhammel/Petersson:38), but it is likely the cotton textile industry of China would not have taken off without the Yuan government's assertive promotion policy.

The Ming dynasty, founded in 1368, continued the policies of its predecessor, i.e. to encourage cotton cultivation, and the production of cotton textiles, as a means of gaining revenue. Soldiers, their families, imperial households, official emoluments and exchange for horses in the frontier markets all came to depend on the government fund of cotton (Wiens:517). The Ming government fostered a tax policy which assessed obligation in the form of cotton and/or cotton cloth, but which also allowed the tax payer to substitute cotton or cotton cloth for grain to fulfil quotas. A major source of this taxation originated in Songjiang where, along with silk-producing Suzhou, the first Ming emperor set excessive high fiscal burdens. As the grain tax was commuted into cloth equivalents, local people had to produce cloth not only to meet the fiscal requirement but

also to earn enough income for subsistence. For tenant-farmers, participation in cotton production helped them to pay the high cost of rent which was itself a consequence of the increased tax-quota.

Rent payment in cotton, called huazi, was accepted by landlords not only on cotton fields but on land with rice as the major crop. The high tax/rent had a direct impact on the 'popularization' of the rural cotton industry, and, in effect, became the basis of a series of economic turning points in the history of cotton textile production in the late imperial era.

Economic Turning Points in the History of Cotton Textile Production 1450-1800

In the second half of the fifteenth century, cotton textile production in Songjiang had become completely commercialized, and by the end of that century, it was claimed this prefecture "clothed the empire" (CHC:689). The partial conversion of taxes from kind to silver, initiated by the local prefect in 1486, pushed the commercialization of Songjiang cotton even further. In Songjiang and in other Jiangnan regions, i.e. Jiaxing, Huzhou, and Hangzhou, raw cotton production could not meet the demands of the cloth producers so that large quantities of ginned cotton had to be shipped down the Grand Canal, or up the coast from Fujian and Guangdong to supply the Jiangnan-based spinners and weavers.

By the sixteenth century, cotton cultivation had extended northward and westward: the bulk of the cotton utilized in Songjiang workshops came mainly from Henan, Hebei, and Shandong (Nishijima). In these northern regions raw cotton was not processed because the dry climate there hindered spinning; the thread became brittle and uneven. Thus, an interregional trade developed whereby the northern provinces supplied Jiangnan with raw cotton that was processed there into cloth, and the textile producers bought grain and foodstuffs from their profits. The development of cotton culture in Ming China stimulated regional crop specialization: "rice land was crowded out by cotton, necessitating closer interregional dependence for subsistence and commercial goods and in turn stimulating the rapid growth of markets and market towns" (Wiens:519).

But then, sometime in the last decades of the Ming dynasty, there was a 'breakthrough' in the production of textiles in the north. People in Suning, Hebei discovered that cotton could be spun and woven during the northern summer if it was done in underground cellars where humidity

could be conserved (Chao:21; Bray:217). As knowledge of this process quickly spread, so did cotton weaving. Within several decades, northern cloth competed with Jiangnan textiles. By the end of the dynasty (1644), Jiangnan had to import more raw cotton from the southern provinces than ever before.

Further economic changes occurred in cotton textile production during the first 150 years of the Qing dynasty (circa 1644-1800). At the start of this period, every province in China grew cotton, furnishing sufficient quantities for local production, and a certain surplus to the Jiangnan weavers; this condition lowered the cloth prices which was to contribute to the general economic depression that accompanied the fall of the Ming (CHC:518). According to Kang Chao, the farmers in Guangdong and Fujian provinces saw their way of this malaise by changing their priorities. Instead of growing cotton and/or producing cotton textiles, they started to plant sugar cane and tea on a large scale, and to combine that agriculture with double-rice cropping. Rather than grow their own cotton, they exchanged newly harvested Jiangnan cotton for "hundreds of shiploads" of refined sugar. Eventually, the Jiangnan stocks of cotton could not meet the needs of these two southern provinces, and the two regions turned to shipments of raw cotton from India for their requirements. By the last quarter of the eighteenth century, these two former cotton production centers had become cotton deficient.

Finally, we should consider how the demand for home-grown opium during the eighteenth century affected cotton and textile production. In Sichuan and Shaanxi about this time, peasants began to switch from cotton to opium poppies which meant that these provinces had to import both cotton and cotton textiles from nearby regions. In contrast, cotton production in Hebei expanded enormously and became a principal supplier to Korea of cotton cloth (Chao:23). Thus, cotton textile production in north China (which was relatively poorer in resources than southern regions) had become more important in the Qing era.

These afore-mentioned changes are indicative of the transformation of China's global trade networks by the end of the eighteenth century. As the economies of Fujian and Guangdong became more involved in the processing of sugar and tea, a response in part to foreign demands for these items, cloth production there became ever more tied to foreign supplies from India and other

regions of Asia. The case of the Hebei-Korea link draws our attention to the continuing prominence of intra-Asia trade for China during this period, and later.

The Social Organization of Cotton Textile Production

In China, cotton was not a plantation crop, as in antebellum America, nor a factory product, as in Victorian Lancashire. It was a household crop, and cotton cloth the result of family output that was tied to a system of brokers and guilds for marketing and distribution (Adshead:86). Unlike silk textiles which were routinely manufactured in factories, i.e. spaces capable of housing 100 or more looms, the fabrication of cotton cloth remained a small-scale rural enterprise, often, as in the case of north China, carried out as a 'subsidiary' activity among tenant farmers (Chao:29-30).

Since the success of cotton textile production depended on family solidarity, modern scholars have queried the role of women in this matter. For instance, they have probed women's earning capacities and the relationship of their work input to mortality rates (e.g. Elvin). Living standards, rates of labor intensity, and expectations about female propriety and work, have been the foci of a number of studies. In two recently published articles, Kenneth Pomeranz has analyzed the 'competing perspectives' of Hill Gates, Philip Huang, Jack Goldstone, Li Bozhong, and of Mark Elvin, about these issues. He counters their views with some general observations about the significance of the Chinese work ethic that amounted to a kind of 'badge of honor' (similar to the shibboleth 'to work is glorious'), and the volatility of women's earning power. He has concluded that "women's earning power...was much closer to their husbands...than were English women of the same period (i.e. eighteenth century) based on his calculation of the "rice-buying power of cotton cloth" (Pomeranz 2005:243). One of the most important implications of Pomeranz's research is the value placed on daughters: a family's capacity to survive and to profit from its work relied upon "an optimal mix of family members of particular ages and sexes" (*ibid.*:249). Thus, two adult weaving women in one household may have proved just as advantageous as sons who did agricultural labor.

However, the capacity of rural family units to market their home-produced cloth was limited. The

distribution and sale of cotton textiles were dependent on merchants: not only those merchants who purchased the cloth for sale in market towns where government licensed cloth brokers (yaren) controlled their dissemination to long distance entrepreneurs (keshang), but also those who bought ginned cotton to sell to spinners, or those who purchased yarn to sell to weavers in Jiangnan's more specialized environment. It may be argued, as Timothy Brook has done, that the merchants who dominated cotton textile distribution extracted their profits from outside the production process: "by buying cheap and selling dear, by monopolizing the local markets in which spinners and weavers could exchange their products, and by binding producers to them through usury" (Brook:199). In that way, the organization of cotton textile production in late imperial China did not resemble the European putting-out system which was controlled from within through the provision of raw materials and the regulation of production pace.

Concluding Remarks

Recent studies of the late imperial economy have argued that the cotton textile industry was one more example of the limitations of China's economic development (Huang; Brook): cloth production took off, expanded, and bloomed in a market economy but within a local social structure which did not foster serious quantitative and qualitative changes (cf.Zurndorfer). These analyses lead one to ask how well segregated were the highly commercialized regions, such as Jiangnan or southern Fujian, from the rural enclaves where either raw cotton or cloth was marketed and shipped elsewhere. One would like to know more about how vulnerable the cotton industry was within the competition of long distance domestic markets in late imperial China (cf.Long Denggao). The broad issues of local production and market integration await further exploration.

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