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State and Social Regulation of Informal Sector Labour: Silk-reeling Industry of Ramanagaram, Karnataka

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Abstract

This paper presents analysis of the relationship between state and social regulation in the silk-reeling cluster in the town of Ramanagaram in Karnataka. This cluster has been a site for silk-reeling since its birth and it currently contains over a thousand home-based reeling and subsidiary units and they, together, employ a majority of the population. The discussion we present here draws from in depth conversations with various stakeholders in the sector – reeling unit owners, the workers in this sector, the various agents involved in this trade, officials managing state-run markets, and the bureaucrats involved in the development and implementation of policy. Production units in the silk reeling industry come under the category of the informal: exempt from systematic enforcement of labour legislation pertaining to factory work because of their location within entrepreneur's homes. However, the state is certainly not absent from the sector as a whole and in fact plays a crucial role in key activities located outside the site of production. We argue that in the context of an economy where owners of production units often run units with their own labour and that of their families or work alongside hired labour, state policy for the sector and the process of its implementation as a whole is a form of regulation of work. Our work analyses the complex relationship between socio-economic hierarchy of production units and the ability of firms to accumulate a surplus, in order to understand both why (i) the silk-reeling industry has seen lags in technological advancement and very little expansion despite the growing demand for silk yarn and why (ii) state support for the sector is becoming even more concentrated towards elite entrepreneurs than it was in the past.

Keywords: informal sector; small-scale industrial clusters; liberalisation; state regulation of labour; social institutions and the economy.

Section 1: Introduction

A grand narrative in India's growth story, post 2000, has been that a large part of increases in employment has been either in what has been called the informal sector or in informal category of work in the formal sector (NCEUS, 2009). Of about 6.4 million new employment opportunities recorded during 2000 - 2010, about 76 percent were in the informal sector. Even out of the 24 percent of the new employments in the formal sector, 81 percent were in 'informal employment' (Kannan, 2011). This growth in the informal sector sets India as an outlier even amongst developing countries.³ A reason cited for the phenomenal growth in this sector is that being outside the scope of most labour regulations, it is able to expand in situations where the formal sector may be mired in complex labour laws (Marjit and Kar 2011). The informal is seen as the un-taxed, un-legislated, un-regulated 'other' of the formal sector that is seen as being heavily taxed, legislated and regulated (Chakrabarti and Thakur, 2010). Therefore, the clarion call for pushing towards labour law reforms in the formal sector if the problem of "jobless" growth in this sector has to be tackled (Bhagwathi and Panagariya, 2013). We argue that this simplistic diagnosis of the "informal sector" growth, based primarily on labour regulations and control, glosses over the diversity of industries in the informal sector. It stems from looking at the state regulations vis-à-vis labour purely from the perspective of laws regulating Labour and Industrial Relations. The informal sector in India accounts for firms that do not qualify for regulation under the Factories Act of India. This sector is extremely heterogeneous and it covers a wide smorgasbord of Indian manufacturing, services and agriculture sectors, including several specialised industrial clusters (Harriss-White, 1999). We wish to push further the argument made by Papola (2013) that labour in this sector, though not governed by specific labour laws are crucially affected by industry-specific regulations. Unlike the formal sector, industry-specific regulations in this sector directly impact labour, because this sector is also more labour-intensive (Henry, 1987).

In addition, informal sector activity in India is heavily regulated by social structures. Affiliations to caste, class, religion, gender, among other institutions all play an important role in the way in which economic activity is organized (Harriss-White and Gooptu, 2001). We re-iterate Polanyi that "the human economy...is embedded and enmeshed in institutions, economic and non-economic. The inclusion of the non-economic is vital." (Polanyi, 1957: page 250). Only industry specific field studies will help us understand the complex inter-play of of these factors and give a

³ <http://www.bloomberquint.com/union-budget-india/2017/01/11/india-on-a-jobless-growth-path>

clue to the continued resilience of this sector, often couched as its “dynamism”. As with other such activity in India the continued engagement of marginalised groups in this work might not necessarily represent its viability but instead might be a result of their indebtedness to multiple sources, including agents and buyers, low liquidation value and immobility of capital between industries, and of the lack of alternative employment for themselves and their family. Their religious and caste identities and networks and lack of capital makes it difficult for them to enter other industries and even where it is possible to find wage work they are unlikely to earn enough to repay debt. For these reasons they run production units, using family labour and earning very low wages, but being able to use their revenues to pay creditors.

This implies that state regulations vis-à-vis labour, especially in the informal sector, have to be seen beyond the Industrial Organisation rubric of industrial relations, industrial disputes and labour legislations. For sectors like silk reeling that exhibits many characteristics of informal sector work, the process of understanding state regulation of labour will benefit from industry-specific analysis, which takes into account the vast gamut of state and non-state interventions that impact labour in this sector. We will situate the industry specific policies of the state in the context of globalizing India, post 2000. Consideration of ways in which state regulation relates to, and interacts with, social institutions is essential to understanding work in the informal sector in India. In this paper, we do this with respect to a specific industry: the silk-reeling sector.

As with other small-scale informal sector industries, production units in the silk reeling industry are exempt from systematic enforcement of labour legislation pertaining to factory work because of their size and they fall under the radar of regulatory bodies as a result of their location within entrepreneur's homes. However, the state is certainly not absent from the sector as a whole and in fact plays a crucial role in key activities located outside the site of production. We argue that in the context of an economy where owners of production units often run units with their own labour and that of their families or work alongside hired labour, state policy for the sector and the process of its implementation as a whole is a form of regulation of work. We suggest that, because of their role in determining the ability of production units to accumulate a surplus, state interventions have both positively and negatively impacted the work vulnerability of employers and their family members, as well as that of the labour they hire by determining the ability to operate profitably, the regularity of work, wage rates, and levels of indebtedness. Further, we argue that it is essential to understand the ways in which social institutions regulate the economy - in terms of their role in the implementation of state policy in the cluster and but also in a range

of other ways that make them central to the structuring production and work in the industry. Understanding the social segmentation of the silk-industry offers an understanding of the reasons for the low profit margins accessed by the silk-reeling industry and the persistent work vulnerability in the sector.

Regulation of specific aspects of work has been enforced haphazardly by the state at different times based on pressures from particular interest groups. These include the enforcement of a ban on child work in the sector, policies for reduced gender-based inequality, restrictions on the value of salary advances to employees (as a way of reducing debt bondage), and recent enforcement of a minimum wage. However this industry has seen a wide variety of other industry specific regulations such as: support for the introduction of new technology which might improve working conditions of labour or simply substitute them; management of international aid to the sector; the regulation of imports; control of markets for raw materials and finished products both directly and indirectly; and the provisioning of credit both for investment and for consumption smoothing.

Most of the latter state interventions on behalf of businesses are aligned towards the interests of the producers. Along the production chain in the silk industry, these could be the farmers producing silk cocoon, the reelers producing silk yarn, or the weavers producing silk – depending upon the political economy surrounding these policies. Therefore, it is essential to also place the policies in the context of the wider industrial production chain of silk. The state intervention in this sector also happens through several channels – through the statutory body established in 1948 called the Central Silk Board with a vision to see India emerge as the leader in the world market for silk, the various central ministries (Agriculture, Labour, Textiles), the respective state governments and also through multi-national donor agencies. We discuss some of the peculiar features of the silk reeling industry, that has always made it necessary to look to state support of some form or the other – either overtly through interventions via the Silk Board, or through price-supports and subsidies.

The discussion we present here draws from indepth conversations with various stakeholders in the sector – reeling unit owners, the workers in this sector, the various agents involved in this trade (who may or may not be producers themselves), officials managing state-run markets, and the bureaucrats involved in the development and implementation of policy. In addition, we draw from conversations with other key players along the production chain - cocoon farmers and silk

yarn buyers. We use the narratives from these interviews to explain the way socio-demographic and economic characteristics of this industry interact to determine the impact of state policy vis-à-vis the labour in this industry.

The structure of this paper is as follows: Section Two provides an introduction to the cluster we have studied in Ramanagaram and describes the theoretic frames and methodology we have used. Section 3 details the organisation of production in the cluster and then details the role of state interventions in the silk reeling sector on the cluster as we see it today. Section 4 takes some specific regulations relating to this industry and traces its impact on various players, especially labour. Section 5 discusses interaction between state regulation and caste, religion, gender, and age in this industry. Section 6 describes negotiations around access to markets, to technology, and to credit within this industry in order to understand the mechanisms by which state and social regulation interact. Section 7 offers a final reflection on the significance of this case in understanding the complexity of labour regulation in informal sector production in contemporary India.

Section Two:

2.1 Context: Ramanagaram - the Silk Capital of India

Ramanagaram, the two-hundred year-old town studied has been a site for silk-reeling since its birth and it currently contains over a thousand home-based reeling units and a number of subsidiary enterprises clustered in and around it and they, together, employ a majority of the population. It has the second largest cocoon market in Asia and since 2015, is run on a digitized e-auction platform. Almost all owners and employees of silk-reeling units in Ramanagaram identify as Muslim or Scheduled Caste. Silk-reeling has historically seen high uncertainty, low profit margins, hazardous work conditions and the stigma of being physically and ritually polluting and this has reinforced the low socioeconomic status of those employed by this sector.

The silk production chain comprises of the silk-cocoon rearing, mulberry farmers on one end, to the silk weavers (both handloom and powerloom) on the other. The silk reeling sector is wedged between these two industries. Comparisons between the silk-reeling sector and other sectors along the silk production chain, which engage individuals with higher caste and class status, allow an understanding of the ways in which state policy has interacted with market structures and social affiliations to reproduce the socioeconomic marginalization of those engaged in

reeling work. Further, examining structural inequalities within the cluster, we see ways in which political affiliation, religious leadership, and economic power have resulted in differences in the ability of production unit owners to access markets and negotiate higher profit margins; to hold hired labour despite the shrinking labour force; to access and benefit from state schemes and subsidies which facilitate up gradation to more efficient and profitable technology.

The concentration of firms specialising in silk-reeling, owned by members with shared religious and caste affiliations makes it essential to think about the organisation of production here in terms of the relationships of production units to each other as well as the broader socio-territorial context in which they are located. The reasons for, and the implications of, the large number of firms located in close proximity are discussed in order to understand how social and economic relations have collectively shaped and regulated both production and reproduction within the cluster and the interaction of firms with external markets and institutions. The particular focus here will be on understanding how socio-economic vulnerabilities have been reproduced in this town, over time, as they have been in numerous other clusters of informal sector economic activity in India where marginalised populations own and work in production units specialising in stigmatised work.

The large body of work on industrial clusters in marginalised informal sector work informs the way in which the interaction between state policy and socio-politics have shaped the development of this agglomeration of silk-reeling units over time.

2.2 Theoretic Frame: Marginalised Work in Clustered Petty Commodity Production

Industrial clusters have often been the focus of development policy as a result of the idea that positive externalities resulting from the geographical agglomeration of small firms in similar or complementary activities catalyses industrialisation and has the potential to reduce unemployment rates and alleviate poverty (Stanley, 2014). The inseparability of economy and society in these sites is stressed as an important factor contributing to cooperation between firms enabling small firms to collectively compete with larger firms. However empirical studies of these clusters of industries associated with socio-economic vulnerability suggest that modelling them as homogenous, dynamic, and sites of beneficial cooperation might not accurately reflect the reality. Scholars point out that clusters in developing countries have not always consisted of firms that collaborate effectively but often have tiers of firms corresponding with existing social hierarchies. In these situations the benefits of clustering may be spread unequally across firms,

benefiting firms and owners who are socially and economically more powerful as well as traders, agents, and other mediators (Smyth, 1992).

Extensive work on industrial clusters in India (including Das, 2005; Harriss-White, 2003; Kennedy, 2004; Knorringa, 1996; Stanley, 2016; Vijayabaskar, 2008) locates similar arrangements across the country where marginal social groups are engaged in hand-based work that is often low paying and can sometimes be stigmatised like reeling work; these clusters include the leather cluster in the Palar Valley in Tamil Nadu (Kennedy, 2004), the footwear cluster in Agra (Knorringa, 1996), the metal work cluster in Moradabad (Ruthven, 2008), the gold ornament cluster in Arni (Stanley, 2016). This work suggests that these sites of production and reproduction, more enduring than they were initially thought to be, can be seen as a widespread feature of the Indian economy.

The Marxist term petty commodity production (PCP) has been revived to describe this form of economic activity where those who appear to own their means of production are often exploiting their own labour and so, rather than there being a dichotomous relationship between capital and labour, 'disguised' labour coexists with wage labour and entrepreneurship (Barbara Harriss-White, 2010).

The scale of petty commodity production in India is well established: the accepted estimate is that unregistered, informal, activity accounts for more than 90% of livelihoods in the country and contributes over two thirds of the GDP (Kannan, 2008). An important feature of petty commodity production is the operation of units at levels where the marginal profit is lower than wage - the cheapened labour of proprietors and their family enable the survival of these firms - therefore understanding the implications of this for the labour and livelihoods of the large number of women engaged in productive and reproductive informal sector activity is crucial. The competitive advantage that these clusters of small firms have might be this ability to cheapen their own labour and the labour of their employees by operating under exploitative conditions. Barbara Harriss-white (2010) argues that in these situations, surplus is extracted through rents, interests, and the terms of commodity exchange and also that capital accumulation is rigidly regulated by social affiliation.

2.3 Methodology of the study

Following the emphasis that clusters should not be studied statically in time but rather as a continually evolving entity, shaped by its history, detailed surveys of the histories of production units in the town and of the institutions they interact, were carried out as part of this study. In addition, interviews were carried out with administrators and scientists from the Central Silk Board and with officials from the Karnataka Department of Sericulture who are located in the town. Policy documents and evaluation reports prepared by the Central Silk Board, the Karnataka Department of Sericulture and by international funding bodies were used to understand specific policies and their impact on the sector.

3. State Regulation of the Silk-reeling Cluster Overtime

3.1 Production in the Ramnagaram Silk-reeling Cluster

The majority of the thousand or more production units are run by Muslims –less than a hundred units are run by either Tamil or Kannada-speaking Scheduled Caste entrepreneurs whose firms are located in two pockets, one in the east and another in the west of the town. Employees of these firms also live in these areas – often segregated by caste and religious affiliation.

The offices of the Karnataka Sericulture Department, including research units, cocoon testing units, and a regional silk board, and the state run cocoon market are located within the town. Cocoon supplies come from nearby villages but also from other parts the state and even from the neighbouring states of Andhra Pradesh, Tamil Nadu and Maharashtra earning it the moniker 'Cosmopolitan cocoon market' and making it the largest cocoon market in Asia, with an average of thirty metric tonnes of cocoons being traded there every day in an open auction.

As with industrial clusters technological advances in this cluster have not followed a strictly linear path. In fact, while some entrepreneurs have upgraded to newer technology, economic shocks and uncertainties have seen others moving back to older technologies.

Five types of technology exist for silk-reeling the region - the hand *charka* which produces silk fibre and was extensively used in the early days of the industry; the motorised *charka*, which is a semi-mechanised model of silk fibre production; the cottage basin, which is now the most common technology, and produces fine silk thread; or the multi-end unit which is subsidised and promoted by the Sericulture Department as technology that can be used to produce high quality

thread compatible with Chinese imports; or an Automatic Reeling Machine (ARM) which produces high quality thread on a larger scale. Each of these units differ in terms of capital investment, labour requirements, volume and quality of output, and energy consumption.

The charka is the most basic equipment - it consists of a water tank heated by a furnace, which has a series of open points - reelers are seated on the tank at the open points. Reelers put cocoons into the boiling water, separate silk threads and direct them to a reel located above the same water tank. The hand charka requires the reeler to turn the spindle by hand - and the motorised charka was developed by linking a crude system of belts and motors which turn the spindles at a much higher rate and free up the reeler to be able to work with twenty or thirty cocoons at a time at a location further away from the charka. The cottage basin and the multi-end units are similar in that heated water is piped into basins at which reelers are seated, boiled cocoons are placed into each basin and the reeler identifies loose ends of silk thread and passes them into slots which direct the thread to the reel. The differences between the cottage basin and the multi-end units are that in the first water is heated by a firewood furnace and in the second by a pressurised boiler, reducing firewood need and that in the second and third each reeler works with a larger number of cocoons directing silk ends to more points leading to the reel so output per person is higher. In the Automatic Reeling Machine (ARM) all stages are mechanised - typically hired labour monitors the working of the machine and fixes any breakages in the yarn when required.

3.2 State Regulation and the Silk-reeling industry

State support for the industry can be divided into the following phases (i) In the late eighteenth century, local rulers were interested in this as novel luxury commodity, followed by the colonial government looking to develop it as an alternative source for silk which they had been importing from southern Europe. Post-independence not only do we see the establishment of the Silk Board in 1949, but we see the shift to looking at silk reeling (ii) as a key to employment generation - and reeling especially as a way to offer entrepreneurial opportunity to marginalised groups - lower caste and class workers. Post 1990s (iii) it was felt necessary to improve quality of yarn, and increase scale, to prevent dependence on? imports. There was greater importance given to the growing of quality inputs – in the form of strengthening sericulture research and offering subsidies for growing the hybrid, bi-voltine variety. Cocoon development has been slow and often successful and so there was pressure to allow cheap imports until domestic demand matches requirement of powerlooms that were the users of silk-yarn. In 2002 (iv) quota restrictions on silk imports were removed. Since then there has been a constant concern about reducing imports

(as has been the case for other economies where silk consumption has been high (Giovanni 1986)). At the same time, reducing quota restrictions and import tariffs brings down demand for, and prices of, local silk. This meant a clear balancing act for the state, acceding to the interests and demands of all groups along the production chain.

3.3 History of the silk reeling sector

Silk production involves multiple stages, each of which require very different skills and raw material inputs. From the early days of the industry these stages have been divided across geographic regions but also along caste and class lines. Sericultural activities and silk cocoon production was typically carried out by the landowning Hindu castes and upper class Muslims who had the land required to grow mulberry to feed the worms (Charsley, 1990) and saree weaving was practised by upper caste Hindus (Ramaswamy, 2006), and the intermediate stage of reeling has been performed by lower class Muslims and Scheduled Caste Hindus (Rice, 1897).

The silk-reeling industry has seen stage patronage since its earliest days. The initiation of silk production in the Mysore region in the 1780s has been attributed to Tipu Sultan - who was enamoured by gifts from a delegation visiting him from China. He sent emissaries to Muscat in Oman to learn the art of producing silk and also to bring back silkworm cocoons in the 1780s and the production of local began, amidst many battles being waged against colonial armies in the region, and grew with the support from a team of seven hundred experts trained in sericulture brought in from the eastern Indian state of Bengal (Kirkpatrick, 1811).⁴ In 1799 Tipu Sultan was killed and the region came under British control, but the industry managed to revive itself under the new powers who were also interested in silk production by then.

The colonial period saw a range of institutional measures being put in place to encourage silk production including the invitation of experts from Italy and Japan to assess the local industry and suggest technological innovations and more imports of silkworms and mulberry, this time from Japan. The industry faced multiple set-backs - as a result of infections affecting the silk worm population and also as a result of fluctuations in demand - but though there were periods of out-migration and times when it seemed it would come to a standstill (Rice, 1897) it continued to grow over time. This was a period of technology transfers and a change in the geography of

⁴ At the same time the East India Company was establishing its first filatures in Bengal - in an attempt to create a new source for silk yarn following the decline in European silk production as a result of an infection which almost entirely destroyed silk cocoon rearing in France and Italy. Though it was only much later that a filature unit the size of those in Bengal reached the south Tipu Sultan hired a large number of workers to bring silkworms to what was then the Mysore state and to train local farmers in rearing the worms.

reeling sites colonial state, colonial administrations employing specialists from Europe to advise them regarding their entry into the industry in their colonies. Mysore was, at this time, recognised as being particularly suitable for silk rearing at this time and so state attention is focused on this region.

In the early 1900s lower class and caste Muslims continued to dominate reeling. Charsley and Karanth analyse the dual relationship between caste and occupation in the town with the lower caste groups being engaged in the work and engagement in the work further contributing to being labeled as untouchable (1998). In this period the work continued to be mostly on hand-charkas with little movement towards filature technology, though two filatures were already operational in the area, one which opened in 1860⁵ and another in 1896⁶. It is likely that high capital required and the uncertainties in the industry acted as barriers to the lower income group's acquisition of this technology.

By the second half of the twentieth century - in the post-Independence and post-war period, the growing town crowded out sericultural activity and the town became known as a silk-processing hub. Mechanised charka and filature technology as employed in the region, increasing output and increasing reliance on hired labour. This period saw families from higher income, higher caste groups earlier engaged in agriculture moving into the sector, running production units in managerial capacity with hired labour, using social ties to source raw materials. However following the regulation of cocoon markets these groups lost control of the market for raw materials and the higher income groups moved out of the industry back to agriculture, mainly planting mango orchards, but others diversified to silk-twisting at this time. Following the initiation of industrial processes in the 1950s and 1960s, the sector experienced a period of growth and saw continued shifts from hand-reeling to the mechanised cottage-basin reeling production units faced the need to employ non-family labour. Increased demand and profitability made it increasingly viable to hire labour and measure of success and well-being for entrepreneurs was the ability to free family members from the difficult, 'unclean,' and potentially harmful work of silk-reeling. This period saw a wave of labour migrations in to the growing reeling industry in the town. Significant populations migrated from other, smaller, silk

⁵ Two Italian brothers brought the first steam filature to the region in 1860, their interest was to find a new site to locate production since the reeling industry in their home district had been brought to a standstill.

⁶ In 1896 JN Tata brought a second filature to the region in an attempt to bring modern production techniques to South India. The filature was located on a silk farm and Tata brought a couple from Japan to live there and teach apprentices how to use the machines, and this began the first filature training-site in the region.

reeling centers - particularly Kollegal and Chamrajpet - coming to Ramanagaram, already skilled in the work, for the higher wages being offered as well as for the possibility of getting advances.

Significant development aid was directed to the industry in the 1980s. When the Swiss Agency for Development and Cooperation (SDC) approached the Government of India to express interest in contributing funding 'to support the uplift of the rural masses' (Sinha and Sagar 2005) one of the industries chosen for them to support was sericulture, including interventions in Karnataka and specifically in Ramnagaram. The World Bank invested USD 54 million in increasing raw silk production, improving quality and supporting research and development under the aegis of the Karnataka Sericulture Project (KSP). The Karnataka Sericulture project addressed Mulberry production and silkworm breeding and rearing to improve supply of raw materials to reeling. They also supported the implementation of large state run filature units to improve raw silk output but did not focus on upgrading technological access for small-scale private reelers at this time (World Bank 1991).

The 1990s was a period which saw strong state support for the sector on one hand, and increasing uncertainty due to both reductions in raw material availability as a result of an epidemic that destroyed silkworm crops and reductions in demand for the finished product as the price of silk yarn in the international market crashed⁷.

The National Sericulture Project was implemented in 1990 with the mandate to improve cocoon quality – but it's success was mixed because of the external shocks being faced by the sector (World Bank 1997). The Japanese International Cooperation Agency (JICA) began the first of a three phase project which ran from 1992 to 1997, with a focus on improving the dissemination of bivoltine rearing technology, which saw some success unlike previous efforts. The development of bivoltine cocoon production continued with the second phase of the JICA project. During the same period the Central Silk Board implemented the first phase of their Catalytic Development Project which introduced Multi-end reeling machines into the sector.

In the mid-1990s the Janata Dal member of parliament (MP) contesting from the town became Chief Minister of Karnataka State, and he later became Prime Minister of India. Thus this period saw high level political interests in allocating funds to the town, with becoming the headquarters

⁷ In early 1992 the price of Chinese raw silk in the international markets fell by 25% and a similar fall was seen in the Bangalore market. Prices started to rise by late 1993 but the agglomeration of Chinese silk producers imposed a cap on their products and so prices fell further - to about half of those that had been anticipated for that year (World Bank Report – National Sericulture Project).

of the new Ramnagaram district. Specific measures to develop and protect the silk industry were taken at this time including completely banning the import of raw silk from 1995 -1998, while regulated quota imports were earlier permitted (Santhanam and Purkait 2013).

By early 2002 the state political environment had changed and at the same time quota restrictions on silk imports were repealed as part of the national market reforms which had begun in the 1990s. Tariffs on raw silk imports have fluctuated haphazardly since the abolishment of quotas, as a result of a tug of war between the interests and pressures from the sericulturalist -raw-silk producer lobbies and the weaving lobbies looking to import raw materials.

Since early 2002 the silk- reeling industry has witnessed dramatic fluctuations in price and demand following attempts by the central government to open the domestic market up to imports of raw silk, which come primarily from China. Tariffs have been pegged upwards and downwards ranging from 50% to 5% of the cost of the import. Tariff cuts have typically been large and are often partially or totally revised in subsequent years with the government juggling between pressure from weavers - who want to be able to import Chinese silk at low prices, particularly for use in power looms for which the stronger, machine made Chinese silk works better than Indian silk which is more prone to breakages – and silk rearers and reelers who cannot compete with Chinese silk. Whether the Chinese silk is cheaper because of a strategy to dump silk in the Indian market and shut down local industry, or because it is machine produced using the type of automatic machine that just entered the cluster – or because of a combination of the two – is debated but remains unclear.

After 2002 a large number of firms began to compete for good quality raw cocoons at auctions in the local market, pushing raw material prices up. Simultaneously demand for the finished product has wavered - sometimes very dramatically in response to changes in tariffs on imports in Chinese raw-silk- the shift from handloom to power-loom weaving makes the cheaper Chinese silk especially desirable because it is more suited to the new technology.

The cuts in the import tariffs on the better quality silk result in crashes in the price of locally produced raw silk. For example, in 2010 tariffs were cut from 30% to 5% and prices of domestic raw silk plunged from Rs. 2,600 per kg to Rs. 1,800 per kg overnight (Central Silk Board, Bangalore). Two years later the tariff was raised to 15% and prices rose to earlier levels. As a result profit margins have fluctuated widely and the volume of production varies constantly in an

attempt to keep production at break-even levels. Increasingly production takes place at levels where the revenue from the sale of raw silk covers all raw material, labour and operating costs, and profits to the business owner come from the sale of bi-products.

In 2010 a single new automatic reeling machine (ARM) was set up in the town with significant subsidy from the Central Silk Board both for its purchase and its monthly operation. By 2015 between forty and fifty automatic reeling machines (ARMs) have been sanctioned. The Central Silkboard maintains that the entry of this new technology will not negatively impact the demand for silk produced by reelers using older technology and operating small-scale units.

Those who have been economically and politically powerful enough to demonstrate the land and capital holdings needed are the ones who qualify to receive ARMs through the state. They are offered significant subsidy both for the purchase of machinery and for the purchase of raw materials. Other intermediate level unit owners express hope that cheaper, mid-range, semi-automatic units will become available, while a majority of unit owners make it clear that they will never be able to afford the new technology.

Throughout the post-independence period subsidies have been provided to incentivise the use of technology that produces better paying silk, and subsidies to silk-reelers on the basis of yarn produced (table 1). As seen in Table 1, post 2000, this has taken the route of providing huge subsidies to Automated Reeling Machines. This also means support for those who are economically more powerful, resulting in higher investment in the sector but even more concentrated/restricted in terms of the number of people it reaches - those who are socially and politically powerful. Concurrently, the industry is also impacted by the tariff/duties on imported yarn. This was clearly visible in the fluctuating customs duties on imported yarn post 2000. There were periodic cuts in duties for powerloom weavers that impacted the reelers and farmers along the lower end of the value chain, which had to be pushed back, due to farmer agitations⁸.

⁸<http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/silk-farmers-stage-protest/article2309953.ece>, last accessed 9th September, 2015.

Table 1: Subsidies for Silk-reeling Machines

Type of technology	Unit Cost (INR)	Subsidy amount (INR) and awarding body			Total
		Central Silk Board (CSB)	Karnataka Dept. of Sericulture		
Charaka Unit (Up-gradation)*	10,000	5,000	2,500		7,500
Cottage Basin Unit (New)	2,50,000	1,25,000	62,500		1,87,500
Multi-end reeling unit (New)	1,000,000	5,00,000	2,50,000		7, 50,000
Automatic Reeling Unit (New)	10,000,000	50,00,000	25,00,000		75,00,000

* Scheme to reduce child labour

Source: Karnataka Department of Sericulture
(<http://202.138.105.5/sericulture/English/Schems/frmCatalyticDevelopmentProg.aspx>)

Time-line of Changes to Import Customs Duty

Year	Import duty	Change duty	in Quantity cap	Quantity imported	Reason for the change
Prior to 2001	greater than 40%		4,000 metric tonnes		
2001	30%	10% decrease	---	9,000 metric tonnes	WTO ruling
2011	5%	25% decrease	---		Elections in Weaving states
2013	15%	10% increase	---		Demands by reelers
2015	10%	5% decrease	---		Lobbying by Weavers

4. Labour Regulation and Social Institutions

In this section we discuss the complex ways in which regulation of labour has interacted with social structures to influence the nature of work in this cluster.

4.1 Role of caste and upward mobility for caste

Silk reeling, because of its association with dead or dying silk worms has been restricted to very few communities - namely, the Muslims and the Scheduled castes among the Hindus. Caste/religion based industry clusters are also found among businesses like leather, for similar reasons. This labeling as a ritually polluting activity, results in it not being pursued by other castes among the Hindus. It is therefore relegated either to the backward castes or to Muslims. This has its own social repercussions – such caste taboos result in making the social networks in this cluster narrow, restricted and dense. This also explains the persistence of small firms in this industry.

Over time it is possible to trace upward mobility offered to marginal groups (Charsley 1992; Mayoux 1993a and 1993b)) particularly between the 1960s and 1980s when weaving output grew and demand for domestic yarn was high. For families owning units it meant making enough of a profit that family members could be removed from the work-force, children could be sent to school, women worked in the home and did less taxing tasks in production units, and men looked after purchases and sales - and labour was hired to take their place. In other cases, children who started out in low paying jobs were able to become supervisors of units, sometimes individuals who first worked as child labour were able to start their own production units after a few decades of work, since the sector was doing well, and also because it was possible to get caste-based subsidies from the government.

We find that a Scheduled Caste Tamil population, which had migrated to the area before the establishment of the cluster and had been in the area for three to four generations has in particular been able to benefit from government schemes and subsidies allocated for SC/ST entrepreneurs. This population initially worked as agricultural labour and occasionally as labour in other local industry including timber production and silk weaving units, and moved almost entirely to reeling labour as the cluster expanded in the 1970s and 1980s as Muslim entrepreneurs actively sought them out. The group now continues to largely be engaged in silk reeling both as entrepreneurs and as labour- after learning the work as labour in Muslim production units the second generation of silk reeling labour (third or fourth generation migrants to the region) set-up their own production units using state support in the 1990s. On the other hand, very few Scheduled Caste migrants who came to the town in the 1960s and 1970s as reeling labour have been able to avail of these schemes and to operate their own units.

4.2 Use of Child Labour

As in most informal sector manufacturing, the use of child labour was endemic to the silk reeling industry. During reviews of the Karnataka Sericulture Project (KSP) there was strong criticism, at the international as well as the local level, of both the state and of funding bodies for supporting a sector in which children work under hazardous conditions. The period following this saw the enforcement of anti-child labour laws through raids and inspections. Production units employing children who were not members of their family were subject to - fines and in some cases to the withdrawal of reeling licenses (World Bank Report - National Sericulture Project). The legal grounds on which the state could regulate child work in the sector was often unclear since the production units were too small in size to fall under the ambit of the Factories Act of 1948 (Roy Choudhury 2001).

Migrations to the industry and the town in the 1960s and 70s were often from agrarian contexts where children working was common, and necessary for several reasons - which could vary from family to family- including: to be able to efficiently produce enough for the family to subsist and to teach children the work and equip them with essential skills, but also sometimes because an employer of the parents demanded that their children work for them as well.

Child labour in the silk-reeling industry was common again for varying reasons. In some cases children worked in the cottage-industry based production units run by their families in their homes, contributing to family resources and learning the work and in others families who had migrated for work all joined a production unit and contributed their wages to the family, again here it was an opportunity for children to gain useful skills.

Child work in the industry received the attention of the local state and also non-state actors in the 1990s. In the 1990s several NGOs worked in the area, partnering with the local state. Research on child labour - its causes and consequences - was carried out in the area and the local media carried some of the findings of these studies. The World Bank faced criticism for funding a sector which employed children in hazardous work. Though the Bank responded that they were not aware of child work in the sector and that they do not condemn child work because of its complexity (Tucker and Ganesan 1997) and suggested that the interventions they were funding were essential to improve efficiency of the industry which would free child labour (Coursen-Neff 2003). There has been no new funding for the industry since then. The relationship between the

discussion and discourse around child labour in connection with these projects and critical involvement of civil society to the ways in which decisions regarding child work are made by families requires further consideration.

A series of measures have since been implemented to keep children out of reeling work. Regulation of child work by the state is much more strongly enforced now, with regular checks and inspections by both the labour department and the revenue department of the district. Employers confirm this saying, "Now we can't employ children even if we want to. There's too much of a headache involved with the labour department's checks and legal action." Bridge schools, sometimes called child labour schools in the town, have been established for children removed from the workforce and also for children of labour who were not attending school. These state funded schools are run by teachers from a local NGO and their purpose is to ready children for mainstream schools. The bridge schools typically have a kitchen facility and a warden and children are provided with all three meals and may even sleep in the school.

The significant shift of child labour away from silk-reeling seems also to have to do with the fact that now in this saturated cluster that is facing falling demand, the work itself is not seen as being economically viable, so parents feel gaining skills in the sector is not worth the cost to their children's well-being because they aren't assured a job and there is little scope for upward mobility since there is no room for new entrants into the market. With the liberalisation of markets in India there are now other alternatives outside the town: working in textile factories oriented towards exports is seen as being more respectable and construction-related work is better paying. However it is not easy for families who chose to keep their children out of the workforce because work opportunities within the town are scarce so there is a time-lag during which children who are too young to leave the town and look for work rely on the income of other family members. Children who attend school as first generation learners without family support often don't finish with skills that will gain them employment. It is also harder for young women, whom families are reluctant to allow to commute long distances for work - which is especially true for Muslim women for whom movement outside the home itself was heavily restricted in the previous generation - and for women with young children. These groups tend to seek very low-paying domestic work for more affluent families in the town or take on very low-paying piece-rate home-based work. The labour department recognises this but continues to enforce bans on employing children in reeling because of the health implications.

Children still go to work in units, sometimes on school holidays and in the summer vacation, doing odd jobs like cleaning or carrying cocoons from the fireplace to reeling basins to supplement the family income with small earnings. However usually only a reeler well known to them will take the risk of allowing them in to the factory as a favour to the child's family, and children hardly ever learn the work of reeling.

4.3 Role of Women Workforce

Since most firms in this sector are home/family based, women of the house are unpaid family labour. Not only do they have lower wages; but unlike the male workers in this sector, they rarely can set up their own units and lack access to more skilled work (Mayoux 1993a). The National Sericulture Project included women's empowerment as a specific goal. The unequal terms under which women worked in the sector was brought to attention, again, by evaluations of the Karnataka Sericulture Project (and broader global action against discrimination of women in the labour force). The objective of specific policies relating to women's work in the sector were intended to address the lack of women in entrepreneurial roles in family production units where they typically engaged in unpaid work, the lower wages paid to women who worked as hired labour and the restrictions on women taking on work that is seen as being more skilled and is better paying (such as the process of winding and of factory supervisor). During this period a scholar of gender and economy working in the cluster noted the ability of local entrepreneurs to prevent regulation of women's work in the sector (Mayoux, 1993a and 1993b) as well as ineffectiveness of the measures that were put in place - such as the provision of credit to women which was used entirely by male family members. Delays in the implementation of legislation enforcing the payment of minimum wage, maternity leave, pensions, and insurance to women were not updated following the in 1979, though they were enforced in other similar sectors. Ramanagaram, like most of south India, has seen a huge proliferation of sources of credit for women, especially the Microfinance Institutions, whose clients were filature workers. The role of MFIs is contested and has led to greater vulnerability of women in this sector (Joseph, 2013).

5. Silk Reeling at Ramanagaram

The uncommon raw material used in this industry, namely the silk cocoons (*bombyx mori*), to a large extent, determines the trajectory of this industry. Cocoons are perishable and cannot be stored. India is uniquely placed to have an agricultural cycle where cocoons can be grown every 25 to 30 days and supply of cocoons can be made on a daily basis. For the reeling firms, this implies working capital outflow on a very frequent, if not daily basis. A typical reeler in

Ramanagaram spends the first half of his day buying the silk cocoons in the Ramanagaram Silk Cocoon Market. He spends the second half of the day overseeing the reeling in his unit. Through the active intervention of the Karnataka Sericulture Department, this market got replaced from a physical auction to a digital or e-auction a year ago. Reelers now bid for cocoons on their mobile devices. In our interview with V⁹, who was then the Deputy Director of the Karnataka Sericulture Department, we were told that the Ramanagaram silk cocoon market has 500-600 registered buyers, of whom 60 to 70 percent are active on a regular basis.

There are two varieties of cocoons auctioned in this market - the multivoltine or yellow cocoons and the hybrid, bivoltine or white cocoons, that is typically priced higher than the yellow. Quality (and price) of the cocoons also vary depending from the area they come from. One of the first questions that reelers tend to ask the cocoon sellers before the auction is which place (*ooru*) they come from. Silk cocoons are a costly input, as we were told by V: “You see our reelers are not economically well off. Many of them are working with loans from traders. You see cocoons are expensive and most of them don’t have money so they borrow from the agents and they have to repay to them.”¹⁰ This was reiterated by most reelers, with whom we spoke. Cocoon prices fluctuate due to factors like weather - heat, moisture and waterfall. AP, one of the silk-reelers running a multi-end silk reeling unit told us “Cocoon prices are very high right now because of the heat - where we used to get 200 lots now only 50-70 come and everybody is competing for them. The prices are nearing 500. Today the range was from 420-470 [per kg].”¹¹

There is tacit knowledge involved in this purchase, gained through experience over generations. Silk reelers often talk about this experience needed in gauging the quality of the cocoon; since the quality of the cocoon can have a measurable impact on the output of the yarn reeled. This was explained to us by BN, one of the cocoon farmers we visited “They [*Reelers*] look at the cocoons, and with experience they can estimate the *renditta* that they will get. [*Renditta is the measure of the number of kilos of cocoon needed to produce one kg of raw silk yarn*]. They will also touch the cocoons to see how firm they are. You might also see some reelers cutting one cocoon with a blade to check its thickness. Experienced reelers are able to look at the cocoons and estimate the *renditta* accurately.”¹² Both the need for daily cash outflows and some degree of specialised knowledge has limited entry into this industry. It also explains the dominance of

⁹ Interview with V - around 11.30 am, August 31st 2015, in his office located above the cocoon market, Ramanargaram.

¹⁰ Interview with V - around 11.30 am, August 31st 2015, in his office located above the cocoon market, Ramanargaram.

¹¹ Interview with AP - dated May 13, 2016 in his factory premises, Ramanagaram.

¹² Interview with BN, at his home, Achillu, August 31st, 2016.

agents in this industry, who are willing to lend advances to the silk-reelers. AP put it very succinctly, “Yes, we are dependent on the middlemen, the *dalal* who collects money...”¹³

Apart from the silk-worm, the other key player in this industry are the filature workers - those who are adept at extracting the raw silk from the worm as it is being boiled in water. Filature again requires a tacit skill that comes from experience. The conditions for labour in this industry are also far from ideal. Wages are low, working conditions are tough and availability of work fluctuates depending upon the price and availability of cocoons. The labour force shrunk with the almost complete exit of child labour both as a result of enforcement by the labour department and perceived need for schooling - or at least to not expose children to the health damaging silk-reeling units, with young adult males traveling to nearby cities in search of work, and very much reduced in-migration as work in the sector is no longer as attractive. In the period following liberalisation financial difficulties have often resulted in more family members moving back to work in these units. Salary advances have been used to hold labour while maintaining this flexibility of output - keeping them in undesirable, low paid, and irregular work.

There is no formal organization or formal protection for labour in the sector – though there maybe informal collective bargaining as well as schemes to which individuals may apply (such as pension) and also benefits that employees might get as a result of their employers relationship to politics/the local state.. Therefore, labour advances play a major role in this industry. Advances are used by reelers to retain and attract workers; workers also see advances as a way out of their petty wages and precarious nature of employment. A trader, a young Muslim man running his father's business explained - "The auction market is competitive - and it's a matter of ego," he said, using the English word. "Once bidding starts everyone is charged up and sometimes they let the price rise to a point where it is no longer profitable - just to one-up the others. It's the same competition with advances - you offer one of my good workers a high advance and take him away from me at Ramnavami (in April), I want to take away five of your workers by Dussera (in October). And that happens, so we end up paying higher and higher advances just to please our egos."¹⁴ Today, what the reelers rile most is the acute scarcity of labour in this sector. Not only do they have to compete with other units through labour advances, but there has been an opening up of opportunities for labour with the growth of Bangalore and its

¹³ Interview with AP - dated May 13, 2016 in his factory premises, Ramanagaram.

¹⁴ Interview with NK at his home in Mandipet on 23rd April 2013.

surrounding areas as the IT hub of India. The garment factories mushrooming around Bangalore also provide new avenues of work.

All these factors acting as entry barriers have played a big role in keeping the scale of production in this sector small. What we see in Ramanagaram is a form of Petty Capitalist Production (PCP), with small, undifferentiated units of production. In such a structure, production is increased through replication rather than expansion (Smith, 1986). Therefore, we see many filature workers going on to establish small units of their own, as they are able to accumulate some cash. Many units are family run units run with the male members of the family working along with some hired labour. The distinction between labour and capital in these units are blurred (falling in the category of the catch-all phrase: self-employment). This is the main reason why any collective organization of filature workers to improve the work-conditions has not happened in Ramanagaram. Not only do many reelers or their family members working in these units, but workers are also in and out of wage-labour and own-labour. In the unit of AP, we met one of his workers, T, who has been working as reeling labour for twenty years. He started four basins of his own - from 2015 - 2016 - with help from his friend, money from a *cheeti* (fund), and his sisters were working in it along with hired labour. But he didn't make any profits and he kept borrowing to invest in it - cocoon prices were high because supply was low - and silk prices didn't compensate for it. In the end he had to close down - and let the advances go - because it didn't make sense to take more credit. He told us that this situation - where he is an employee - is better. "At least now if I need money I can ask the *ejmaan* (Master) but who does the factory owner ask? He can only ask God"¹⁵. All this re-iterates the complexities involved organising labour in the informal sector, despite labour conditions being far from ideal. As seen in most family run units, not only is there is over-exploitation of family labour (Harriss-White, 2014), but unlike other forms of PCP, there is no cushioning provided by self-consumption of a part of the output. Production here is always for the market and not for self-consumption. Thus, not only do we find the classical Marxian exploitation of labour-surplus by the producer; but being completely market driven, a large part of this surplus also is expropriated by agents/traders taking output on credit, or financiers and moneylenders since this industry relies on credit and advances, making the exploitation of labour that much severe.

¹⁵ Interview with T, dated May 13, 2016, Ramanagaram.

Any regulation intended to affect any of the above will have repercussions on labour, which in our analysis includes not only the hired wage labour, but also ‘disguised’ wage labour working in family run units. However, the consequences might vary, depending upon whether you are working on somebody else’s unit as a hired hand or whether you are working in your own unit. Of the government interventions discussed in section 3 above, the push towards Automated Reeling Machines (ARMs) impacts hired labour in the most obvious way. One of the reelers, HMB to whom we spoke had set up an ARM, “The need to move to an ARM has been on my mind for a while now. I’ve been thinking about it for the last four or five years. I went to China and saw it...We are facing a labour problem - there is less labour now. ARMs are a good option because they need less labour and also cottage basin/ multi-end work is difficult so people will be more willing to work in an ARM. Their hands won’t get damaged.”¹⁶

However, it is not just state subsidies towards labour-saving machinery that have such consequences. A similar situation has also been precipitated with the growing demand for silk domestically and the increase in the import of cheap Chinese silk yarn post 2000. Before 2000, the political economic factors at the center and state government levels, and the perspective of looking at this industry as employment generating one, the Indian reeler, to a large extent was protected by high tariffs on yarn imports. With the easing of these import barriers, the only way the reeler could become competitive was by scaling up production via the ARMs. The previous hurdle to the use of ARMs was the supply of bivoltine, hybrid, non-native cocoons. With a simultaneous push given to the production of bivoltine cocoons through farmer subsidies, even this has been obviated. AP was much taken in by the idea of setting up an ARM, “[it will give] much higher profits. Here we need two people per basin - for them you need one person for four basins – so one-eighth the labour requirement. For us the labour cost for producing 1 kg of silk is 350, and for the ARM it’s 150. Our silk sells at between 2500 and 2700. ARM silk sells at 3000. Chinese silk at 3150. So ARM owners make 500 more than us on each kilo of silk - 200 from labour - and 300 because the price they get is higher. Per kg of silk that they make each day, if they make 500 more than us, they can make - 500×30 - 15,000 more per kg of daily output per month.”¹⁷

This has meant that the reeler today is looking at labour replacing technology far more favourably than he did a few decades ago. For the few reelers who can afford it, the Automated

¹⁶ Interview with HMB, an ARM owner, in his house at Ramanagaram, dated May 4th 2016.

¹⁷ Interview with AP - dated May 13, 2016 in his factory premises, Ramanagaram.

Reeling Machine (ARM) offers a way out of dealing with increasing labour cost and labour advances. ARMs are seen to be the future – both to take care of growing demand for silk and to reduce the Chinese imports of yarn. This has meant an elaborate process of applications and verifications leaving only the moneyed, politically connected reeler to set up ARMs. HMB, who had set up an ARM was a councillor for five years. He too had this to say, “Not many people will be able to invest in ARMs because you need land and capital. People from different groups will enter - farmers, it’ll go to Tamil Nadu. People running powerlooms will start running them.”¹⁸

Since not all units can afford to go the ARM route, units that are unviable and do not have the wherewithal to apply for ARMs have gone down the technology chain and rely only on family labour. So far, this has laid the ground for a typical Marxian prognosis, where there is an increase in the industrial reserve army, both because of active discharge of labour due to use of machinery and also recruits into it from the petty capitalists. However, unlike in the Marxian analysis, where this scenario is brought about by almost a frenzied competition among atomistic producers that compels them to intensify production, here the impetus is provided by the state and state regulation.

6. Conclusion

Studying the ways in which state regulation of the silk-reeling industry has interacted with the social

organization of the cluster offers understanding of how state and non-state actors impact labour in this sector. It also sheds light on why the silk-reeling sector has lagged behind in terms of adoption of new technology and expansions in scale (and thereby formalising) while demand for silk yarn is continually growing. Though it appears that the state has prioritised the other sectors in the silk industry - investing heavily in silk-cocoon rearing technology and favouring weavers by reducing import duties on silk yarn, we suggest that studying the political economy of the sector suggests that the picture is much more complex. It appears crucial to recognise that the historic scarcity of capital in the sector, which is deeply connected to the social and economic marginalization of those engaged in this work, has contributed to the inability of production units to accumulate the surplus needed to grow, while the other parts of the production chain are controlled by social groups who have historically held a higher socio-economic status.

¹⁸ Interview with HMB, an ARM owner, in his house at Ramanagaram, dated May 4th 2016.

Social and economic factors have reinforced each other, historically, determining factors such as access to capital, bargaining power in markets, and options for exiting the industry - restricting the ability of most reeling production unit owners to operate profitably. As a result these production units, like other small-scale informal sector firms engaged in marginalised, stigmatised, and uncertain work, entrepreneurs often earn less than minimum wage themselves and production is subsidised by their own labour and those of their family. Again, like in other industrial clusters (Amin 1994) there is a hierarchy of firms in the cluster, and a few socially, politically, and economically powerful firm owners are able to operate profitably and accumulate a surplus. The role of social institutions - religion, caste, gender, family structures, as well as membership to entrepreneur organisations and local politics and the local state - are crucial to understanding hierarchies within the cluster.

Historical texts and policy documents describe the different phases of state interest in the sector - and the shift from the colonial state's interest in the development of reeling as a promising alternative to European raw silk, to interest in supporting reeling as part of the larger complex of sericulture and silk cloth production to meet domestic demand and provide employment opportunities for marginal groups, to the need to bring about rapid expansion of the sector to reduce dependence on imports. Measures for import substitution mean that state support is focussed on those actors who are able to invest in scaling up production. In the 1990s this meant subsidies for the purchase of multi-end reeling technology and for bi-voltine cocoons. After 2015 it means a shift of subsidies for the purchase of Automatic Reeling Machines (ARMs) which requires a ten-fold higher investment. Therefore, state intervention in the sector is restricted to the class of producers who have the land and capital required to expand production. This means that state policy results in heavy subsidies for those who are already socially and economically powerful while those who labour in their own production units and are unable to generate a surplus face increased vulnerability and continue to remain “informal”.

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