FLAME UNIVERSITY

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RAMANAGARA

The Silk City

RAMANAGARA: THE SILK CITY

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Certificate

This is to certify that the work incorporated in this report titled "Ramanagara: The Silk City" submitted by the undersigned Research Team was carried out under my mentorship. Such material as has been obtained from other sources has been duly acknowledged.

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Abstract

Karnataka has historically been a well-known pioneer of the sericulture industry within India. Among the smaller hubs of silk production, the small town of Ramanagara (51 km south of Bangalore) is popularly known as the "Silk City". The town's historical, socio-economic, geographical and topographic factors have collectively played a role in the working of the sericulture industry of this town and the cocoon market in particular. This study intends to analyze the relevance of the industry to Ramanagara through three objectives; namely, the factors involved in bestowing it with the "Silk City" title, the roles of caste, class, and gender of sericulture laborers, and the influence of neoliberal forces since 1991 on the working of the industry. This shall be understood by using qualitative methods of data collection and analysis, including on-field interviews and case studies. Its goal is to create a holistic picture of the factors and dynamics involved in the mechanisms of the industry, which hence can be said to do justice to the "Silk City" title.

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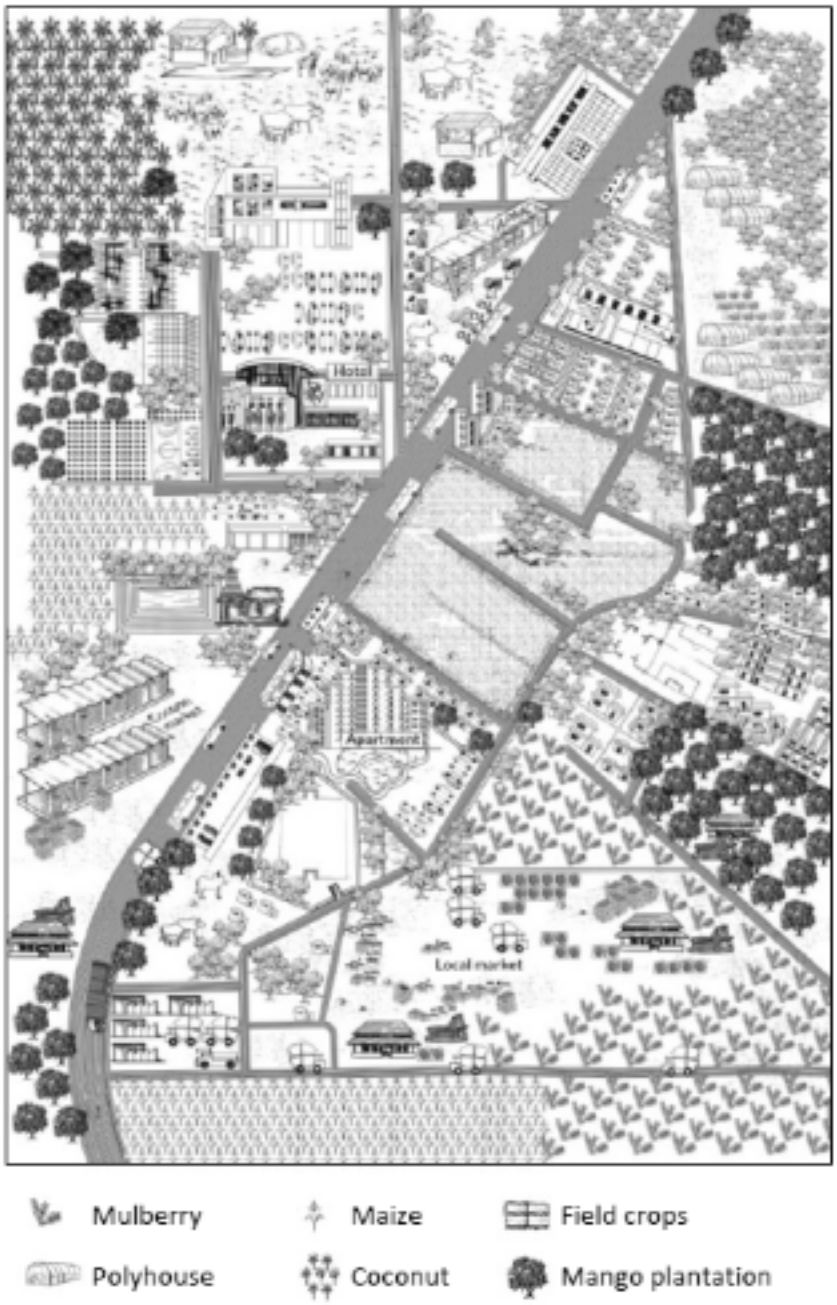

Fig. 7.1 Small-town periphery

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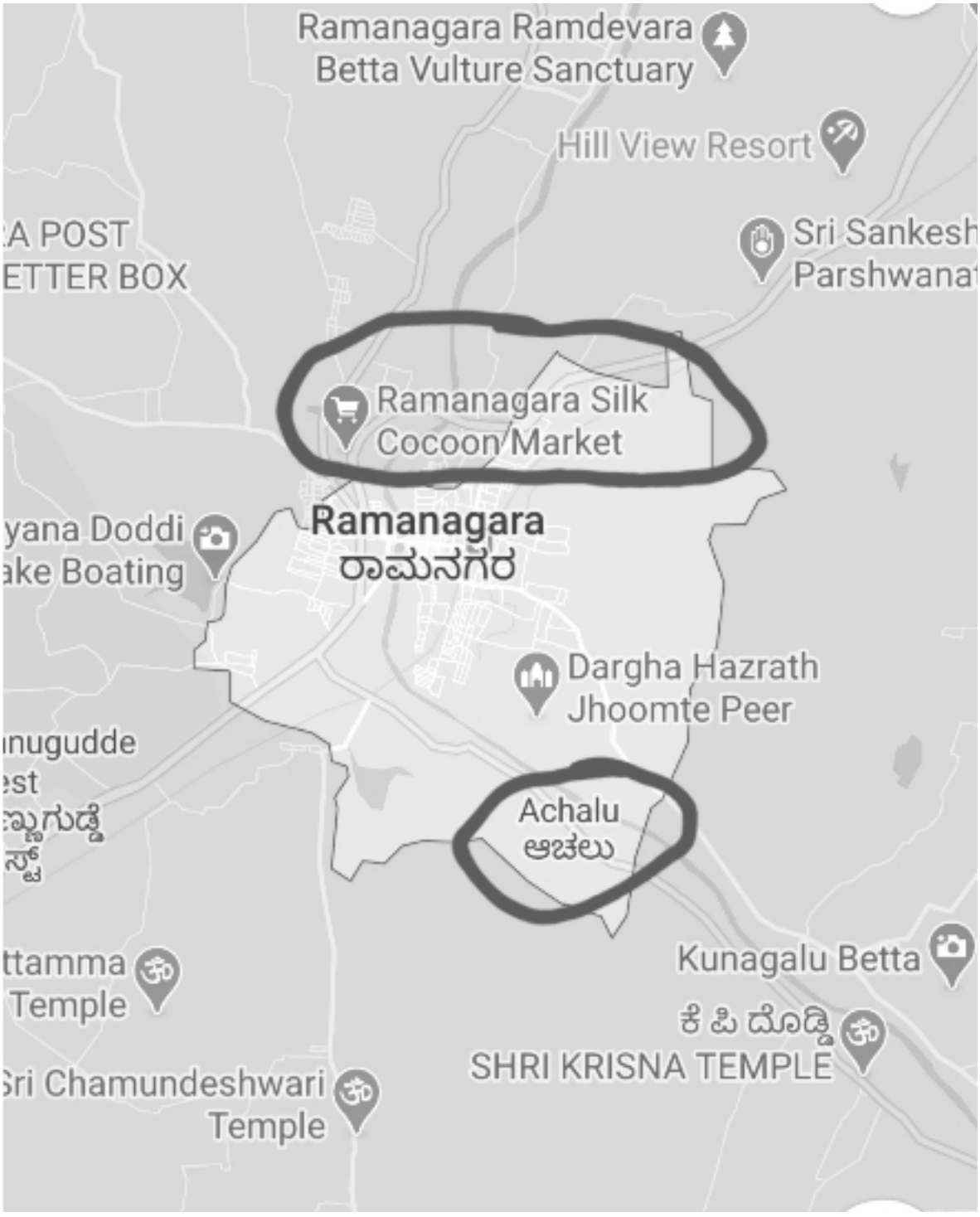

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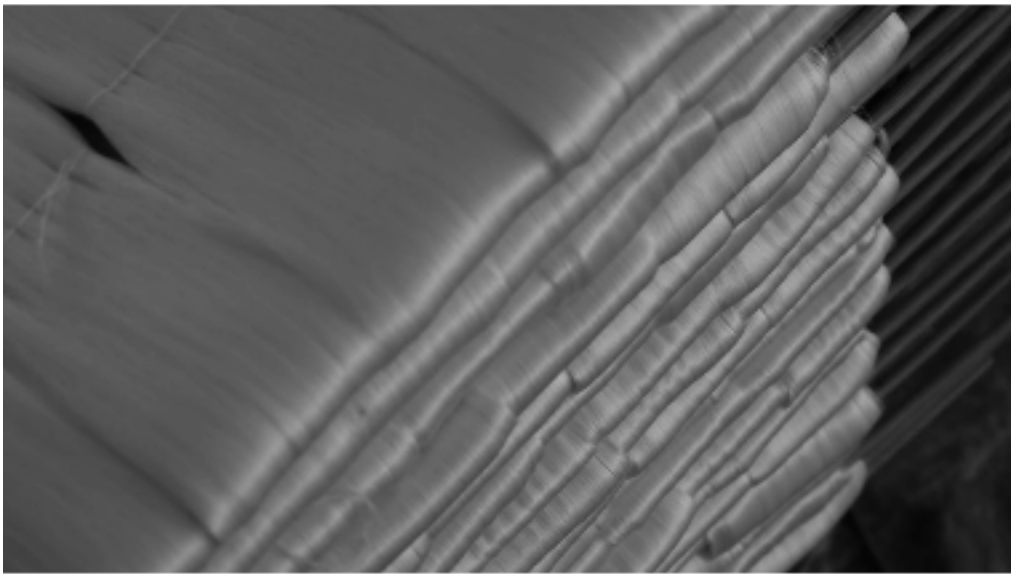

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Chapter 1: Introduction

Section 1: Ramanagara's Sericulture Industry

Vishakanta (2018) defines sericulture as the "art and science of raising silkworms for silk production". He further classifies it as a small scale rural-based industry, which is practiced by impoverished sections of society. It is thus dominant in developing nations (such as India and China) due to the availability of cheap labour owing to overpopulation. He affirms that India has the largest consumer base for sericulture (30348 metric tonnes as of 2016-17) and is the second-largest producer of silk with a share of as much as 16.14% in global raw silk production.

Joseph and Kamnath (2017) state that Ramanagara, also known as "The Silk City", has the second-largest cocoon market in Asia and has been run on a digitized e-auction platform since 2015. In an interview conducted with J.M. Basaiah, the Deputy Director of Sericulture, the presence of 1200 reelers in and around Ramanagara and 11 ARM (Automatic Reeling Machine) generated factories was affirmed. This cumulatively generates a demand of 45 metric tonnes of silk cocoons on a daily basis, the availability of which is facilitated by the government through the creation of a regulated platform, that being the silk cocoon auction market. The latter is a site where licensed rearers (that produce silk cocoons) meet reelers (who demand the same) and negotiate on profit margins before finalizing transactions. There are up to 4000-5000 sericulture workers partaking in the auctioning process, and a sum of up to Rs. 1.5-2 crores transacted on a

daily basis (personal communication, February 10, 2020). This affirms the significance of sericulture as an enterprise to Ramanagara.

Section 2: Historical Overview and Geographical Information

Ramanagara is a town that is two centuries old and has been a center for silk reeling since its inception. It is an amalgamation of over a thousand cottage based reeling industries and ancillary enterprises, both of which are a significant source of employment for the majority of its inhabitants (Joseph and Kamnath, 2017). The town also houses the silk cocoon market that was established in the year 1982 by the government of Karnataka, which considers the mutual intention between the rearers and the reelers to engage in the transaction of the sale and purchase of silk cocoons respectively (Basaiah, personal communication, 10th Feb. 2020). The said market is the second-largest cocoon market in all of Asia and runs on an e-platform since the year 2015 (Joseph, Kamnath, 2017). Pursuhotman (2019) mentions that Ramanagara was earlier called “Shamsherbad” under the rule of Tipu Sultan, followed by “Closepet” which was the name given by the British colonizers in honour of one of their esteemed officers, Sir Barry Close the same source further indicates that the location’s final name, that is “Ramanagara” is derived from the tale stating that Lord Rama in his exile used to live in one of the hills in this place.

Ramanagara is characterized by vast farmlands and unique rock formations which makes it a popular location for filming and recreational activities such as tourism (Puroshotaman, 156). These interesting geographical structures consist of soft brownish stone formations and are known as the Closepet granite (Puroshotaman, 156). The availability of granite makes mining as one of the routine practices in several parts of this destination. Ramanagara's surroundings have a distinctly rough terrain with smooth crests and troughs forming valleys and ridges of gentle slope (Puroshotaman, 156). It also consists of rivers and forests in certain locations with villages interspersed in the area, thus catering to the needs of cattle rearing (Puroshotaman, 156). Some places also witness small clusters of trees that are considered sacred and surround places of worship (Puroshotaman, 156).

Section 3: Research Question and Objectives

Our DIP group collectively arrived at a consensus to observe and analyze the silk-making process in Ramanagara (Karnataka), namely; mulberry plantations, silk rearing, and reeling. We intended to study these processes through three lenses which form sub-areas of inquiry:

- The “Silk City” title given to Ramanagara
- The social factors shaping the industry
- The influence of neo-liberal forces since 1991 on the industry

Our proposed research questions are as follows:

1. What makes Ramanagara the “Silk City”?
2. How do caste, class, religion, and gender manifest itself in Ramanagara’s sericulture?
3. How have neoliberal forces since 1991 affected profits of sericulture in Ramanagara?

The study had the following objectives:

- To understand and link the steps involved in Ramanagara’s silk-making process
- To study the socio-historical significance of sericulture in Ramanagara
- To study the dynamics of caste, class, gender, and religion of individuals involved in Ramanagara’s sericulture

- To ascertain the impact of government policies and economic reforms on the industrial structure of Ramanagara

Section 4: Research Methodology

The research sought an understanding of the various dynamics at play in the sericulture industry of Ramanagara, and hence employed purely qualitative research techniques, to adopt a descriptive and analytical approach. As opposed to using statistical calculations, we wished to interpret processes and meanings to describe the phenomena in context. As mentioned in the previous section, there were three questions that this research aimed to answer without any attempts to back or reject any hypothesis.

Due to the paucity of time, as well as the need for getting various perspectives to do justice to the research, non-probability purposive sampling (a sampling method that handpicks samples keeping certain criteria in mind) was used. Cases were handpicked to be included on the basis of their region, religion, gender, and occupation, considering our second area of inquiry mentioned in the previous section. Scholars and government officials were also a part of the sample for their academic merit concerning knowledge of processes in sericulture and government-driven initiatives in the industry, which supports our first and third areas of inquiry. This method also enabled us to include certain deviant or extreme samples that were distinct from the general population (in addition to those who reiterated commonly observed societal division of labour sector-wise, as indicated by literature).

Snowball sampling was also used, for greater accessibility to interviews and case studies. Most of our data were derived through semi-structured interviews (including open-ended questions). The non-participant observation was relied upon in the case of sensitive data that could not be collected through personal interviews. The information on the samples profiled is given below:

- Rearers: Mulberry plantation and feeding of silkworms is where the journey of silk begins, and therefore it was considered vital to getting a better understanding of the people who commence the process on a grassroots level
- Reeler (Labourers): Boiling of silk cocoons that the rearers produce is one of the most important steps in the process of silk-making. The final silk is produced in the reeling

sites. Interviewing reelers who work firsthand in the reeling units and boil silk cocoons for a living could furnish grassroots level information useful for research

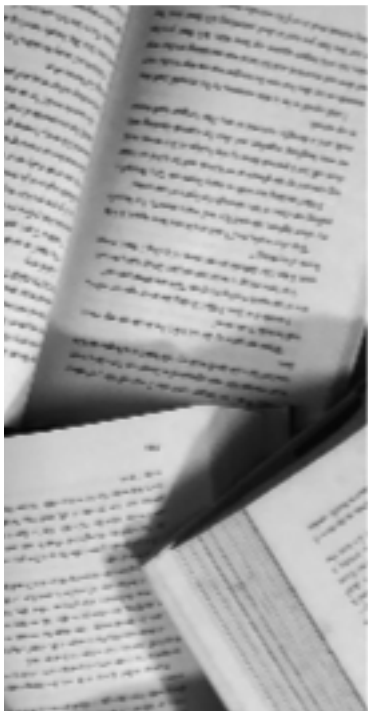
- Reeler (Factory Owners): While the information on the labourers could help to get grassroots level information, factory owners could help in the broader understanding of the position of the reeling sector as a whole in the sericulture industry
- Sericulture Scholars and Government Officials: For in-depth information and a bird's eye view on all the relevant and specific processes of the sericulture industry and also to look for any contrasts that could be present in the narrative they provide as opposed to our other samples

The interview questions, in general, sought to collect the following information from each sample:

- Personal details (name, age)
- Social background (caste, class, religion)
- Living Conditions
- Workplace sector and role (for e.g.: rearing sector, reeling sector, weaving sector)
- Opinions on work-related conditions (work satisfaction levels, complaints, etc.)
- Government role in the industry

To ensure the validity of our research, we used triangulation (using multiple methods to get the same result) under which we used semi-structured interviews, case study methods, and non-participant observation.

Chapter 2: Literature Review



Section 1: Evaluation of secondary sources

a) Performance of Karnataka's Sericulture Industry

Prior to delving into the details of Ramanagara, it is significant to place the town within the broader context of sericulture in Karnataka. The profits and losses driving the industry are crucial to understanding its effects on farmers in a micro-level context. Moreover, while historic, socio-cultural, and economic lenses of understanding Ramanagara each differ in their methodology and approach to study, each of these spheres cannot exist in isolation. The following sources of this section consider primarily the economic angle of the functioning of the industry (at both macro and micro levels) with sporadic references to Ramanagara among other similar silk production hubs.

Firstly, Sharanadavar (2014) attempts to study the production and export performance of the Indian silk industry at large by utilizing primarily quantitative experimental methods in his study. This goal is approached through four major aims; namely, studying patterns of raw silk production in different states, exports and trade competition, the nature and extent of market integration in Karnataka, and consideration of farmer's perceptions of profitability, export potential, and factors involved in the same. The findings of the data indicate a nationwide negative growth rate of area under mulberry cultivation. The paper goes further to list significant constraints in cocoon production and marketing, as well as suggesting possible steps to be taken by farmers to overcome the same. The most significant aspects of this source to the research question are the data provided on silk production and marketing between the years 1990-2012 as well as an exhaustive description of factors influencing the same. This can provide guides to further exploration of specific socio-cultural factors (such as external competition) influencing the sericulture industry of Karnataka specifically. However, there is no data for the past decade (2013-2019) as the paper itself was published in 2014. Hence, recent changes in any of the above-mentioned factors have been unaddressed.

Secondly, Ramesh (2011) studies the fluctuations of market pricing across three major government silk cocoon markets' namely, Ramanagara, Shidlagatta, and Chintamani, between April 1998 to September 2010. The article concludes with a positive relationship between the arrival of silk cocoon to the market with its pricing, broadly indicating the profitability of the

industry. Chapter 1 of this source provides significant inputs regarding the status of silk production in India, within states as well as on a national level, as well as its export scenario. These numbers provide a sufficient all-round understanding of the significance of the national sericulture industry and gauge the position of Karnataka within the latter. However, being an economically-driven study, one major limitation of this source is little to no insight regarding the social forces of the sericulture industry. Nevertheless, the rate of silk production, manufacturing and exports have been represented through multiple models that complement our study of the factors involved in shaping the sericulture industry of Karnataka specifically.

Thirdly, Chaithra (2015) analyses the pricing behaviour and market co-integration of three silk cocoon markets (Ramanagara, Sidlaghatta, and Vijayapura) between the years 2010-2014. Her paper has a similar structure to the previous article of Ramesh KB, yet slightly deviates in its aim, of analyzing the fluctuation of silk cocoon prices within the three chosen markets. The introduction of this paper is useful in understanding the production and consumption of raw silk on a global scale and the position of India regarding the same. However, as with the previous source, this paper focuses on the statistical modeling of the silk cocoon markets and provides narrow insight (if at all) into the socio-cultural or historical factors governing the market. Moreover, the 3-year time frame considered (2010-2014) is rather narrow considering the fact that a subset of our study is the role of historical factors in shaping silk production.

Fourthly, a study by Vishakanta (2018) analyses the economic effects of silk rearing on farmers, based in the Kanakapura, Channapatna and Ramanagara districts, using a sample size of 100 farmers. The farmers were interviewed on both primary data (such as their socio-economic conditions, cropping patterns, size of land holding, and cocoon yield) as well as secondary data (such as rainfall, population, workforce, and irrigation patterns) in order to assess the net costs and benefits of sericulture farming. The overall results of the field survey provide limited insight into our concerned research focus, as they primarily consider cost variation between regions. However, Sections F-I concerning problems faced by mulberry farmers regarding mulberry plant production, cocoon production, and cocoon marketing contains valuable leads to possible social factors involved in the said processes. Moreover, Sections I and J concerning suggestions and policy recommendations give an insight into possibilities for expansion and improvement of the

targeted issues, particularly considering the opinions of farmers in Section I. It must be noted that a majority of the mentioned issues of Sections F-I are ecologically based, with little to no direct references of social or historical factors determining their economic status which can be hence identified as a gap in this source, as is similar with the previous sources.

The above-mentioned sources by Sharanadavar (2014), Ramesh (2001), Chaithra (2015) and Vishakanta (2018) utilize similar approaches and methodologies in their study. They each utilize quantitative methods to form conclusions regarding silk production, export performance, market pricing patterns, and co-integration, and the effects these have had on silk farmers respectively. However, one of the common limitations in each of these is the lack of detail into social and ecological factors that play a role in these trends. Nevertheless, each of their conclusions is beneficial to understanding and predicting the same through mathematical models.

In the book 'Global Silk Industry: A Complete Source Book', Datta and Nanavaty shed light upon the significance of silk in Karnataka with reference to the global textile scenario. The development of polyvoltine silk in Mysore (and growth of silk in Karnataka at large) partially coincided with its decline in Bengal and Kashmir during 1780-90. Tipu Sultan is largely commemorated for spearheading the south Indian silk industry. In fact, he sent an expert to Bengal to study the details of silk processing and cultivation to apply their techniques (2007).

Karnataka's sericulture industry particularly went through a series of pitfalls and highs during the 20th century. While global depression, in addition to competition from imported silk and rayon hit in the earlier part of the century, it was once again revived during the 1940s when silk was utilized in parachute manufacturing. Mysore not only rose as a top producer of multivoltine silk later in the century but is also the location of the headquarters of the central silk board and central sericulture research training institute. Today, Karnataka contributes two-thirds of the mulberry silk output in India. Over one million peasant families throughout the state source their livelihood from bush mulberry cultivation, silkworm rearing, and harvesting cocoons 5-6 times a year. The silk exchange set up in 1979 is also a cause for the flourishing of silk production in Mysore (Datta, R.K., Nanavaty, M., 2007). Considering that Ramanagara is 95 km north of the latter, these findings can largely complement the historical trajectory of silk production in the town which our study aims to unpack. Moreover, among the five states which produce 97% of India's raw silk (including Andhra Pradesh, Karnataka, Jammu and Kashmir,

Tamil Nadu and West Bengal), the volume produced by Ramanagara and Mysore in Karnataka alone is worth 20 million USD as of 2018 (Muthu, 2018).

Maxwell H. and Ensorge E.C provide a context of the industry in Mysore and Madras which narrowly overlap with that in Ramanagara. Mysore's industry dates back to 1780-1790 when Tipu Sultan first imported seeds from China (2015). Purushottam S. and Patil S. specify that it was in 1785 when the first cocoons were imported (2019). The breed and uniformity of the silkworm were also unique compared to that of other silk production regions which boosted profits of the industry. As of 2015, M K Subbarao estimated the acreage of mulberry to be a total of 28,233 acres, of which the highest is concentrated in Mysore (17,000). Mysore has climatically been the most suitable area for multivoltine silk production and holds scope for possible expansion and extension. Apart from topographical factors, Karnataka's silk industry has been fostered by a number of advisors and experts, including Mr. Jamsedji Tata, Mr. Ozdu, Mtr A Chatterton (the director of industries) and Dr. Gorio (the Italian consultancy general in Bombay), in addition to state authorities. Each of these scholars has had diverse specializations, including silk weaving, quality testing, cocoon exports, waste management. Their paper discusses the uniqueness of the existing silkworm hybrids and possible improvements in detail but does not reveal more of the social or historical significance of silk in the area (Maxwell H., Ensorge E.C., 2019).

b) The Relevance of the "Silk City" title

Rice suggests that Ramanagara has had multiple names in history. The most popular ones include Closepet (named after Sir Barry Close, a resident at the court of Mysore), Hospet, Navipet and Ramgiri. It was a popular settlement for Muhammadans who were largely engaged in silkworm rearing. Although the industry was nearly brought to a standstill with the outbreak of disease, it was later revived. Much of the raw silk produced at both Closepet and Channapatna districts were exported (2001).

Since the 20th century, Ramanagara is one of Karnataka's major silk clusters and contributes to over half of mulberry silk production in India. Joseph and Kamnath (2017) refer to Ramanagara as the "Silk Capital of India" in their work. It consists of around 25,500 farmers and 1,500 reelers accounting for 17,500 hectares dedicated to sericulture (Akshatha, 2018).

While miscellaneous industries have been irregular throughout the region, regulated markets of silk and coconut have been long established in Ramanagara since 1962. Mulberry and silkworm rearing were known to provide a 'high volume non-food final product' which is well-channelized that takes land away from food production. Cocoon farmers held active links with private silkworm reeling centers, authorized dealers, and traders of sericulture (Purushothaman and Patil, 2019). On similar lines, Dattasharma A. and Kamath R. claim that the proliferation of silk weaving units was what gave the town the title of the country's silk capital. However, the increasing informalization of silk reeling units has resulted in a downturn in the industry (2015).

Campbell G. and Stanziani A. provide an elaborate account of the origins and history of the town which suggests the title. Ramanagara was established when silk first came to South India in the late 18th century (particularly from the year 1790). Silk production began as an experiment by the erstwhile ruler of Mysore, Tipu Sultan (1750-1799) and was successively controlled and developed by British administrators post his death. While the British found the course raw silk produced to be unsuitable for international competition, it met the growing demand in domestic weaving clusters. This demand sustained the growth of the silk reeling industry through small production units and primitive technology. From 1800-1950 the reeling industry remained a small scale one, which witnessed a growth of home-based production units which largely employed manual spindles and family labour. Cocoons were reared on small landholdings and reeled using charkhas or crude hand spindles by rearer families (2019).

The domestic handloom industry underwent a significant shift and growth in the 1950s. It transitioned from manual reeling to semi-mechanized cottage basin (CB) technology which produced finer raw silk threads, as opposed to coarser ones produced earlier. Mechanized

weaving was implemented through newly emerging twisting units that converted thread to yarn. However, it was only the established reeling entrepreneurial families that held the capital to invest in newer technology, particularly from the 1970s-80s. This phase witnessed the growing demands of a larger workforce, which increased dependence on non-family labour. As a result, both the reeling and twisting units hired migrant workers of whom many had come from remote areas and previously worked with hand charkhas (HC) silk reeling (2019).

Campbell and Stanziani further narrate debt bondage in silk reeling and twisting sectors following economic liberalization of the 21st century, which shall be discussed in the third section of this literature review concerning the same. Irrespective of the latter, they indicate that the growth and evolution of the silk sector are intertwined with the history of the town (2019). The embeddedness of the sector in the soul of the town itself can hence lend an explanation to the 'silk city' title bestowed upon it (2019).

Although the study undertaken focuses on Ramanagara exclusively, the significance of sericulture in its neighbouring areas (particularly Mysore), as well as Karnataka as a whole, are crucial to providing a context into this subsection of the study. Moreover, as mentioned in Volume 3 of The Imperial Gazetteer of India, Closepet (as Ramanagara was formerly known) was categorized as a taluk in the Bangalore district of Mysore and was 30 miles by road southwest of Bangalore as of 1885 (Hunter W., 1885). The proximity of Ramanagara to other silk production hubs renders their review relevant to this study.

c) Influence of Caste, Class, Gender, and Religion in the Sericulture Industry

Ramanagara is one of the hubs of the sericulture industry which provides occupation to most of the town's population (Joseph, Kamnath, 2017). Therefore, sericulture forms an integral part of its social politics with factors like caste, class, gender, and religion manifesting themselves (Akshatha 2018).

Ramanagara consists of thousands of cottage-based reeling units and has a few ancillary enterprises as well (Joseph, Kamnath 2017). A paper by Vishakanta collected demographic information on rearers in Ramanagara; the study chose a sample of 60 farmers, representative of the entire population. It was found that 76.67% of males and 23.33% of females worked in the sericulture industry with 20% being marginal farmers, 30% being small farmers, 20% being

middle farmers and 30% being large farmers. All the farmers owned houses; 23.33% of them living in joint families and 76.67% living in nuclear families (Vishakanata, 2018). In the data collected on three districts i.e Chennapatna, Kanakpura, and Ramanagara, 43.33% of the farmers were illiterate, 13.33% of the farmers had acquired primary education, 7.78% had studied up to 12th grade, 19.00% up till the 9th grade, 11.11% of the farmers completed graduation and only a meager 6% had completed post-graduation (Vishakanta, 2018).

The silk production constitutes the cocoon rearers on one end, and the silk weavers on the other with the reeling sector sandwiched between the two (Joseph and Kamnath, 2017). The reeling sector has historically been viewed as a sector characterized by a high level of uncertainty, low-profit margins, precarious work conditions; it has been tainted by social stigmas and equated to being physically and ritually polluting. This has added to the low socio-economic status of the sector and the people associated with it (Joseph and Kamnath, 2017).

The region being dominated by the Vokaliggas, which is one of the higher castes, has pushed caste politics to the core of its political campaigns and agendas (Akshatha 2018). The marginalized castes in the region include 21.6% Scheduled Castes (SCs), 10% Scheduled Tribes (STs), 58.33% Other Backward Classes (OBCs), 10% General Merit (GM), and thus, the statistics (based on 60 samples) suggest OBCs be a clear majority (Vishwakanta, 2018). Joseph and Kamnath (2017) observe that people belonging to the upper classes are mainly in the rearing and the weaving sectors while lower classes dominate the reeling sector. On the other hand, most of the owners and employees working in the silk-reeling units in Ramanagara are Muslims or belong to the Scheduled Caste (Joseph, Kamnath, 2017). There are 3,000 licensed units out of which 75% are owned by the Muslims who also constitute about 50% of the labour in these units (Reddy Y.G., 2001). It is also of relevance that the size of Muslim families is generally large. Dominating the entire reeling industry, the Muslim community forms an integral part of the town's economy (Reddy Y.G., 2001). He has compared silk-reeling to the other sectors of the sericulture industry on the basis of caste and class which provides a deeper insight on the ways in which market structures and social affiliations are influenced by the state policy, furthering the socio-economic marginalization of the people working in the reeling sector (Joseph, Kamnath 2017).

Furthermore, looking at the structural inequalities, Joseph and Kamnath (2017) brings to light how political affiliation, religious leadership, and economic power influence accessibility to markets, negotiation of higher profit margins and holding hired labour (despite diminishing labour force) and accessibility for production unit owners. The aforementioned factors also hinder access and benefits of state schemes and subsidies which play an important role in facilitating an advancement to more profitable and efficient technology (Joseph, Kamnath, 2017).

Joseph and Kamnath (2017) indicate that the reeling factories are often owned by members with the same religious and caste affiliations as the majority of these are largely house-based and family-run. They moreover elaborate on the relationship between production units of the same community and the larger socio-territorial context it is located in.

This gives us an insight on how socio-economic relations play a role in the production of silk by the reeling units within its cluster, and the relations it has with the market and firms that generate demand for the silk that it produces. As mentioned earlier, reeling as an occupation is stigmatized and considered to be polluted in some sense by society and it is with this very stigma that the marginalization of vulnerable socio-economic communities is reinforced. The concentration of marginalized communities in a line of work that is stigmatized also reflects on the nature of state policy with regards to this social dynamic, and its role in furthering the formation of silk-reeling clusters concentrated by these communities (Joseph and Kamnath, 2017).

Gender discrimination is another social factor at play here with the inequality between genders being widespread. Women are observed to be more involved than men, in all types of reeling processes but are paid lesser than men. This wage gap becomes prominent when we consider how women are incentivized to work in cottage industries with the promising idea of providing financial support to their families and aiding them in climbing the social ladder by being economically independent (Dhorigol, 2005). The discrimination at play here is significant to look at because these women are rural women coming from constrained socio-economic backgrounds with limited access to education and health care which further aggravates their condition. A study by Bloom et al. (2001) brings out the weak position of women, especially rural women who are disempowered because of a lack of awareness about their rights and other

social factors that have reinforced their backward position, and therefore, gender equality. One limitation that rural women have to face is uncompensated productive work. Additionally, they shoulder the burden of household responsibilities like childcare and caring for the elderly which further limits their access to the paid economy. As a result of illiteracy, they are often disregarded in matters of concern to them. This situation can be improved with gender awareness, social education and training imparted to these women. This would help them overcome gender-specific constraints and build up their confidence within households and communities (Mathur, 2017).

One of the crucial factors which contribute to the poor economic status and lack of financial independence of rural women is the absence of their ownership of immovable assets such as land. Where women do have some ownership of land, they either do not have proper titles or own it along with male family members. It becomes imperative to create a conducive atmosphere to enable women's effective participation in the economy. Since rural women in India lead such fragmented and marginalized lives, top to bottom interventions is required to give them the power to foster their development. Extrinsic strategy (top to bottom) becomes vital for intrinsic empowerment (bottom-up), particularly because the extrinsic empowerment strategy lays the base for the process of intrinsic empowerment, which otherwise is not possible. Positive results have now started flowing in drop by drop and are significant enough and cannot be ignored. SHGs require sufficient space so that these drops may attain a bigger size and shape. The government must consider establishing more SHGs. Moreover, the concentration of the SHGs should be in remote and far-flung areas as these are the areas where women are in more adverse conditions (Mathur, 2017).

The silk industry mainly consists of people aged 15-45 years and has been called a 'children-based' industry, owing to rampant child labour, like in most rural sectors (Dhorigol, 2005). A comprehensive study on child labour in the silk reeling industry in Ramanagara revealed the extent of child labour by bringing in the perspective of multiple stakeholders like labour, various industries, departments of sericulture, and child development of the state. This research dates back to mid-1998 and uses core group discussions with all the parties involved. It focuses on the silk reeling sector being a hazardous, small scale industry characterized by the dominance of child labour, 50% of the workers being children below the age of fourteen. There

are few activities in Ramanagara that do not involve working children. To get a more holistic view of the situation, 25% of the workforce in Karnataka and 40% in Ramanagara are children and the numbers are increasing due to the particular form and nature of the sector, the socio-economic situation and the function of demand and supply for child labourers in particular. A 10-basin silk reeling unit employs, on average, 18 people, out of which 8 are child labourers. Since the majority of the reeling units are house-based, outsiders have limited access and therefore, an accurate number of child workers is not available (Reddy Y.G., 2001).

In 1996, a Bangalore based NGO got child labour in the reeling sector of Karnataka banned by the Karnataka High Court on grounds that it was a hazardous occupation. Several government officials (such as employees of the sericulture department) were against the decision as they felt that the eradication of child labour is a major blow to the growth of the industry. As a result, this prohibition was not taken seriously in Ramangara where child labour actually increased because of the engagement of children in sectors apart from reeling. The charkha reeling units saw particularly high instances of child labour owing to their requirements of additional labour to turn the charkhas, supplying the cooked cocoons to the basins and the constant cleaning of the basins. According to the study, illiteracy and ignorance seem to be the principal causes of child labour; an argument being that children pushed into work at an early age are equipped with useful skills for the future, however, most child labourers are given menial and repetitive work like cleaning and pupae picking (Reddy Y.G., 2001).

Children are ruthlessly treated and exploited; not only are they made to work in hazardous conditions, but they also receive fewer wages; as low as two rupees per day. The number of employed girls is six times more than the number of boys in the industry. The main reason for this is the lack of importance given to female education (Reddy Y.G., 2001, Dhorigol, 2005). As indicated by Dhorigol (2005), literacy is observed to be higher in boys and their salary is significantly more than the girls. It is further suggested that most children are employed as bonded labourers and given petty work as helpers, pupae pickers and cooks in the filature units. He also states that child labourers with no proper shelter are exposed to brutalities like kidnapping, sexual assault, abuse, and abduction. Furthermore, Reddy Y.G. (2001) indicates that there is not much wage discrimination observed amidst child labourers but there is considerable activity discrimination between young girls and boys. Women and girls usually take on the roles

of helpers and cleaners and are denied the position of supervisors no matter how experienced they are. Boys, on the other hand, start helping in reeling but eventually get out of the factories to become cocoon transporters to help bring the cocoons from the auction market to the reeling units. Boys are tempted to work as transporters after they turn twelve or thirteen because of the considerably higher wages.

The silk reeling sector also sees an abundance of female labourers as mentioned above. These women further facilitate child labor by giving birth to children who they start bringing to their workplace to supervise them and in a few years, help them. They are eventually coerced by the factory owners to start working there; the employment is supported by the mothers who see it as an essential extra income for the family. The owners of the units benefit from this because of the low wages. The nominal wages demonstrate how earnings of child labourers are merely marginal contributions to family expenditure, from which it can be inferred that poverty is not the sole cause of child labour. It also reveals that child labour is an important factor in the labour cost of the reeling industry even if their wages don't commensurate with the work they do (Reddy Y.G., 2001). Seasons also play a role in child labour. Even though the reeling units are operational all year round, good seasons falling between February and May see higher employment of children. Many of the 2500 licensed units shut down in bad seasons and don't renew their license (Reddy Y.G., 2001).

The paper also brings out case studies of multiple working children in Ramanagara. Through the cases, it can be inferred that the child labourers are well-acquainted with the importance and need of schooling and the role of education in one's life. The majority of them regretted not being able to go to school and felt helpless being illiterate at their age. Some felt proud of working and saw a lack of education as a sacrifice they made for their family, especially siblings, who they were trying to send to school through their earnings. Most of them don't recall how they got pushed into the industry; they were unable to explain how they started working. Most claimed to never employ children in their own factories if they ever had one eventually (Reddy Y.G., 2001).

d) Influence of Neoliberal forces since 1991

Das broadly defines neoliberalism as 'capitalism without leftist illusions', or in other words, affirming that humane capitalism is not possible on a long term basis. Newer economic policies involve state implemented and mediated capital, as opposed to earlier solely government-based initiatives, and hence can be termed as a 'socio-spatial project'. In the Indian context, neoliberalism can be viewed with reference to economic reforms and the new economic policy (NEP). Neoliberal reforms can be seen to represent a 'reversal' of anti-globalization, anti-market, pro-public enterprise attitudes and policies during the pre-1991 period which led to poor growth performance. (2015).

Our paper specifically considers neoliberal forces in context to the New Economic Policy (NEP), launched in India in 1991. This was passed in order to utilize cheap natural resources and labor for both capital investment and micro-level profit. The position of Indian business can be strengthened by foreign capital, technology, export markets and hence promote India to the potential position of global economic power. These goals can be achieved by the demands placed by businesses on the state, which include: the deregulation of private businesses, privatization of government businesses, trade liberalization, permitting foreign capital to own Indian businesses, enacting tax cuts and other incentives for businesses, reduction or withdrawal of government benefits, and complete freedom of hiring and firing labor, among other demands.

Irrespective of its intentions to reap profits, neoliberal reforms have been vastly criticized. They have been cited to restore and reinforce class power, particularly attributing more power to business owners. By these means, markets are less regulated and private entrepreneurship is more encouraged. The NEP has particularly been targeted for placing the bourgeois class above government-driven policies. Some such negative effects specifically include issues of economic inequality, insecurity, unemployment and underemployment, and labor exploitation, the restructuring of spatial relations and geographic unevenness (which extend to provinces and localities), and newer political dynamics (such as the power given to regional elites vis a vis the central government, with regards to pro-business reforms). Raj ultimately asserts that neoliberalism in India can be viewed as a 'global imperialist project', particularly

since the 1970s when financial capital has been seeking to withdraw many concessions and welfare benefits of working classes (Das, 2015).

The ultimate takeaways of Das's article are that neoliberal structures offer lesser room for democratic dissent, political groups and equalized with respect to their adherence to the same, and structures of casteism, religious fundamentalism, and regionalism are utilized to divide working classes and electorates, thus winning votes. Such social dividers undermine the very nature of democracy, thus reducing politics to a neoliberal capitalist agenda (Das, 2015).

Gopalakrishnan's views partially overlap with that of Das in terms of the societal divisions created by neoliberalism. He draws a close correlation of the latter to Hindutva ideology, stating that both of these are 'hegemonic political projects' as opposed to mere ideologies. He supports his claim with the assertion that these both share a starkly similar relationship between the state, society, and individual, reduce social processes to individual choices and decisions, and stress upon the individual as the only meaningful category of analysis. One of his most significant insights is the role played by each in the division of societies into internal and external realms, or in other words, the postulation of 'otherness' or outsiders which create societal disharmony. For instance, Hindutva ideology emphasizes on alternate actors from lower castes or alternate religions as foreigners (eg. Muslims), while neoliberal forces view political actors such as welfare agencies, bureaucracy, and the state, in general, to be outside society and responsible for its divisions). Both of these envision a new society by revolutionary transformation, through their social principle (Gopalakrishnan, 2006).

Both Das (2015) and Gopalakrishnan (2006) provide relevant insights into the definition and effects of neoliberalism as a social force in itself, particularly within the Indian context. The following portion of this literature review intends to consider the effects of such policies on both macro and micro scale contexts within the sericulture industry of Ramanagara, as well as broad overlaps these have with other sericulture hubs in Karnataka. It encompasses both governmental as well as non-governmental reforms and their effects within the sericulture industry, as well as the overlaps these have with our two other areas of inquiry mentioned above (which include the title of the 'silk city' given to Ramanagara, as well as the embeddedness of caste, class and gender roles in the industry).

Eswarappa (2011) considers the role of sericulture which in terms of social development has aided South Indian villages at large. He affirms that local schemes and government projects are crucial to the status of the Indian sericulture industry, citing the example of the National Sericulture Project (NSP) launched by the world bank in 1980. This project generated employment for 1.62 lakh people and particularly targeted backward sections of society. He affirms that development within the sericulture industry itself is key to supporting backward regions, particularly through integrated rural developmental programs initiated by NGOs and CBOs (Community based organizations). This further emphasizes how the status of sericulture in India is dependent on local schemes and government-driven projects.

Multiple sources directly concern the influence of government-imposed policies on the sericulture industry. Firstly, Joseph (2020) provides a more holistic and long term view of the influences of economic policies and reforms, farmer grievances, working conditions, and child labour and assault on the downturn of the industry since the introduction of neoliberalisation. He particularly emphasizes the changes in the terms and roles of debt in silk reeling and twisting sectors in Ramanagara. Following the implementation of market liberalization reforms in 2002, the debt of reeling contracts witnessed a steep rise, while the silk twisting sector has continued to offer the lower salary advances (which was previously common to either sector). Additionally, the existing historical vulnerability of silk reeling producers has been worsened through the market shocks as a result of liberalization in 2002. As a result of the cancellation of trade protections on raw silk, the industry saw an immediate crash in demand for raw silk. Production unit workers faced several losses as a result of low-profit margins and high working capital requirements. In addition to debt, they also lost assets against which they had borrowed to invest in production. The workers in twisting units were however less adversely impacted through the opening of markets, as they did not face an immediate loss in assets as seen with their reeling counterparts.

He also states that debt holders are primarily of scheduled castes and minority groups, thus shedding light on the interconnectedness of social and economic hierarchies. For instance, sericulture and weaving units are dominated by upper-caste Hindu workers, while those in reeling are either scheduled caste workers or Muslims. Silk reeling is noted as a degrading line of work in the industry owing to its association with cuts, burns, respiratory issues, and cataracts,

among other health issues, by direct contact with boiling water (often without protection) and poor ventilation in cottage industries. Interestingly, numerous owners of twisting units had priorly worked in reeling units from where they were gradually promoted to twisting, thus elevating their status in the socioeconomic hierarchy. The conditions of reelers have been further worsened owing to the rates of raw silk. The latter is often pegged against international prices and often occupies a mere fragment of the larger production, thus implying that pricing is of limited control to unit workers. The reduction or absence of profits thus pushed reelers to incorporate family labour, as well as reducing the wages provided to their hired workers. Overall, the implementation of liberalization reforms resulted in losses, uncertainty, labour scarcity, sporadic employment and a decline in wages. Such poor conditions which reelers were subjected to persisted till 2013, marked by prolonged work hours in reeling units and the reduced, or absence of benefits awarded to long term employees (as a result of financial uncertainty and advances given to hiring workers). Overall, this source asserts that the variation in patterns of accumulation among reeling units is crucial to understanding the operation of debt-based labour in Ramanagara's silk reeling sector.

The second source by Akshatha M. (2018) stresses the growing central-government imposed a duty on silk from 15% to 10% in 2015 which serves as a major source of distress for silk farmers. Considering that the state of Karnataka itself accounts for 60% of nationwide silk production, this rise had an adverse effect on the sericulture belt of districts and areas neighboring Bangalore. Farmers in Ramanagara were one of the many victims, considering the drop in silk pricing from 400 INR to 120 INR per kg. The role of governmental propaganda, in this case, is particularly evident in light of the fact that Amit Shah, the BJP national president, had personally met sericulture farmers in March 2018 and had vowed to increase subsidies if his party comes to power. Furthermore, he informed farmers of the steps taken by the center to develop silk clusters. Other such candidates who emphasized sericulture development in their manifestos include HD Kumaraswamy (JDS president), DK Suresh (Congress parliament member), and CP Yogeshwar (BJP candidate). As a Congress member mentioned in the article rightly said, "No election can be fought in Ramanagara by ignoring sericulture growers." Through such examples, the article demonstrates that while silk remains a central subject of political campaigns in the district (particularly with reference to Ramanagara) sericulture farmers

are unsure of whether these political-motivated assurances will ever become a reality. This message closely ties back to earlier definitions and implications of neo-liberalization made by Das (2015) and Gopalakrishnan (2006). They both provide insights into the role of capitalist and social structures (religious, regional, and caste-based interests) which drive neoliberal policies and agenda. By this line of reasoning, the framework provided by these two sources can be applied to such policies within the context of sericulture in Ramanagara.

The third source by Aji (2016) considers a slightly more recent case of the effects of drought and demonetization in Ramanagara (and Karnataka at large) in 2016. In the midst of parched land and an average 81% rainfall deficit in Ramanagara, demonetization further added to farmer grievances by pushing close to 10 lakh residents in fiscal troubles. These combined causes worsened their economic situations of both the poor and middle classes and were particularly hard-hitting to the 11 lakh agricultural labour force. This applied to even sericulture and dairy workers, who occupied primary income sources but lacked cash. Their scenarios however contrasted with well-to-do residents, who received money through deals with bank managers and RBI officials.

As with poorer and middle-class segments of society, reeling factory owners struggled with cash availability. They were particularly challenged in persuading sericulture farmers to accept cheques, which were typically accepted by large scale farmers but not marginal ones. A vast majority of factory owners lost potential cocoon yield due to cash shortages. Factory owners were limited to a maximum of 24,000 INR per week from the bank, all of which was invested in paying their workers. The buyers (factory owners) themselves were paid through cheques, which required a minimum of 10 days to materialize in banks. As a result, numerous owners were forced to shut down their factories to repay loans.

Poor government planning and execution of the scheme are further illustrated in the source through quotes provided by residents themselves. Mahadevaiah, the gram panchayat president of Shanubhoganahalli, believes that Prime Minister Modi should have taken agricultural distress into account while planning the reform. However, in contrast, C Keshavamurthy (a Panchayat development officer) was optimistic that farmers and other rural workers will earn and learn what is sufficiently required in order to operate bank accounts and swipe cards. Nevertheless, this largely differed from other officials who were unaware of how

informed the latter was in accessing bank accounts and ATMs. As with the previous source, this article backs the initial claims of the neglect given to smaller-scale industries within the larger context of development.

The fourth source which complements this narrative is an article titled 'Low import duty on raw silk hits local weavers hard' sourced from the Mint Magazine (2012). This article concerns the reduction of import duties on raw silk, from 30% to 5%, thus making it cheaper to import raw silk from China. This decision has poorly affected 1,25,700 families listed by the government to be involved with sericulture, although not dominantly affecting small weavers as raw silk prices have remained unchanged with import duties. Two examples of the ground-level impact this policy has had can be seen through that of Kumar, a cocoon seller, whose prices reduced by one-third in ten months, and Arafeen, a former reeler turned into a daily wage labourer as he is unable to afford silk any longer. Moreover, irrespective of the import duty itself, Chinese silk is preferred by default by bigger weavers, due to better quality and evenness as a result of ARM production. In contrast, the quality of Indian-manufactured silk differs throughout regions (or even households) owing to cottage based production and is less preferred. The pared import duty introduced has pushed Indian silk weavers at a greater disadvantage. An official of the yarn development committee of Banarasi Vastra Udyog Sangh, K Kediya, mentions that this is particularly disadvantageous for weavers attempting to produce in bulk, further stating that there has been little to no action of establishing a similar model of factory-based production in Ramanagara in an attempt to boost profits. While the new import duty has led to a stabilization of silk cocoon prices at about 2200 INR per kg, the wages of an average reeler for a silk saree have stagnated at 250-300 INR in the past three years.

Ultimately, the core claim of the article is that the initial 30% import duty played a role in making Ramanagara silk more attractive than its technology-manufactured Chinese rival. The drop in import duties thus resulted in weavers to the Chinese variety as opposed to homegrown silk, significantly Ramanagara's sericulture derived profits. The source concludes by summing up the 12th five-year plan proposed by the union government, consisting of a 6,234 crore INR package targeted for 1.3 million weavers. However, weavers in Varanasi indicated lack of enthusiasm, mentioning similar schemes announced earlier which had never reached them, as well as the overall lack of access to such schemes as they take loans from moneylenders or

master weavers. This source overall adds on to an established trend of the adverse (or at best case, lack of) effect of macro-scale policies on both individual and collective profits of the small-town sericulture industry witnessed in Ramanagara.

The fifth source considered which provides an example of the above-cited framework (concerning neoliberalisation and government policies) is by Dattasharma et. al. (2015). This study provides a broad analysis of the manner in which cash flows are affected by the presence or absence of MFI loans at the time of an informal ban on the same (from September 2008 to July 2009). Among the key focus areas of the study, a point regarding the need to understand MFI loans in the context of the totality of consumption, cash inflows, and debt is most relevant to our research. This point can be linked to the manner in which the credit needs of the poor are often neglected in microfinance discourse despite forming the very essence of the debate (ground-level impacts of loans versus assessment of the same). The ultimate question remains as to whether microfinance policies are a solution to economic grievances of the poor, or further worsen the same.

The study concludes by affirming that microfinance loans resulted in what economists call a 'debt spiral', to the extent that debt threatened the family and individual incomes, savings, and safety nets. The situation in Ramanagara represents an unregulated expansion of the microfinance model (especially multiple newly opened channels to meet the needs of the financially marginalized sector) at the expense of other group-lending models. While it is unclear as to whether debt can be majorly attributed to the over-borrowing of clients or the over-lending by MFIs, the large scale adjustments made to households indicate their vulnerability. In comparison to the other sources, the latter provides a comprehensive example linking macro-level trends to the industry at large, and its corresponding effects. It is particularly relevant to providing an insight into a real-life situation depicting the vulnerability of workers across segments in sericulture, which also provides insight into the second area of inquiry of this study (regarding the influence of social factors in the industry).

The final source considered does not directly concern the impacts of government-driven policies or neoliberal reforms. However, it does provide a macro-level insight into the economic angle of Karnataka's sericulture industry. Hanumappa and Erappa (1985) shed light on the extent of differences in the potential of sericulture-driven employment between traditional and

non-traditional areas of Karnataka which stem from differing costs in mulberry leaf production and silkworm rearing. It probes into the extent of these differences by finding the comparative costs of production for two particular points in time (1980-81 and 1983-84). Within the context of government-induced policies and privatization, this source is significant to the extent with reference to the background it provides regarding state involvement. One of the most significant markers of governmental involvement was the creation of a separate sericulture department (between the years 1913-14). It was much later when the Karnataka Sericulture program (KSP) was launched in the proposal of expansion of the industry during a 5-year period (from 1980-85). Initially introduced in 13 districts, it was made possible through world bank loans and envisioned introducing sericulture to newer parts of Karnataka. The program specifically intended to improve existing infrastructural facilities, extend the area under improved mulberry, and encourage bivoltine silk rearing in traditional areas, while introducing large scale sericulture, enabling economic transformation, and extending facilities to popularise sericulture in non-traditional ones. The latter part of the paper illustrates the changes in the industry on a household level, in both traditional and non-traditional state regions, the factors involved in the two phases of silkworm production (mulberry leaf production and silkworm rearing), and the proportions of family and hired labour in each.

The results of this study point towards a greater employment potential of hired labour in the case of mulberry leaf cultivation, while silkworm rearing relies more on family labour. It further concludes that traditional regions show greater stability than new regions. This owes to the fact that the costs and returns structure in the industry provides greater employment opportunities for both family and hired labourers, and moreover supplements the family income. Furthermore, improved and bivoltine rearing show signs for better prospects for earning higher returns than local variety in traditional regions. While there is no direct correlation with governmental schemes or involvement, these findings are relevant to understanding the economic costs and benefits structure associated with the industry, and their direct impact with workers. The overall value of this source lies in its findings of the ‘traditional versus non-traditional’, labourer structure, and possible explanations for profits and losses.

Section 2: Gaps in Literature

While our current literature does provide several insights into the facets of Ramanagara's sericulture industry, there lies ample scope for further exploration. Firstly, multiple sources we have concerning the demographics of workers in the industry date back to the year 2005 or prior. Secondly, most of these provide a macro-level insight into the industry (of both Karnataka and Ramanagara), thus excluding personal accounts, life histories or other such direct examples of employees. Moreover, the literature emphasizes upon dominant narratives (of Muslims within the reeling industry, while Hindus are involved in rearing). This does not take non-dominant intersectional statuses into accounts, such as Hindu reelers, Muslim rearers, and the role of women and children in either industry. Thirdly, little to no insight is provided on the role of Automatic Reeling Machines (ARMs) which are the newest government introduction in the past decade. Fieldwork exploration of the latter is crucial to understanding government support concerning indigenous industries, sericulturist livelihood, and Indian silk quality as a whole. Finally, there are no accounts of Ramanagara's silk cocoon auction market, which is where rearers and reelers meet for cocoon transactions.

Most of the gaps in literature concern Ramanagara's title of the 'Silk City'. Most sources provide vague or ambiguous mentions of the title with little mention of its history or origin. Various indications of the source of the title include the history of the town, the quantity of silk produced, and the number of families involved in the industry. However, there is no suggestion of a particular figure or authoritative body endorsing this title. These could include perspectives of workers across various segments, governmental officials, or sericulture scholars. Most sources cite historical factors (such as the correlation between Tipu Sultan, JRD Tata, and such pioneers of the silk industry, and their relationship with the town) or present-day economic significance of silk to the town. While these factors may contribute to the title, it is unclear as to: (1) whether it is a culmination of such factors, or one such factor alone, and (2) the position of authority involved in granting the title to the city.

Apart from the title, the details of the functioning of the silk industry itself remain unexplored. One of the most dominant reasons of the title, as suggested by the literature, is the 'penetration' and interconnectedness of silk with the functioning of the town itself as indicated

by Campbell and Stanziani (2019) in their brief history of Ramanagara. For instance, they mention the significance of family labour (particularly in reeling) as not merely a feature of the informal sector, but to also contribute to the blurred boundaries between one's home and their workplace. This may further enable children (even from school-going ages) to gain familiarity with the nature and conditions of segment-specific labour, which they inevitably get involved with.

These gaps provide scope for the exploration of the uniqueness of Ramanagara as opposed to other silk hubs, the extent of 'penetration' of sericulture-based labour into everyday lives of workers, the perspectives of stakeholder groups to be interviewed on the field (including workers, government officials, and scholars of sericulture), and (4) the relevance of the title today in consideration of yield and profits through silk in Ramanagara.

Certain gaps are source-specific. For instance, Purushotman S. and Patil S. (2019) mention Kanakapura to host the main silk city sector, in spite of which, Ragi (finger millet) is the most popular crop of both Kanakapura and Magadi and occupies 45% of sown area in respondent farms. In contrast, merely 19% of the land was used for mulberry plantations. Considering the plantation patterns shown in statistics, a question arising is why Kanakapura is considered high in priority for silkworm rearing in contrast to other crops (which are more widely grown), as well as how this compares to Ramanagara. More specifically, the source does not reveal why mulberry is given the third highest preference among crops (after ragi and pulses) when the town itself is known as a major hub for silk plantations. One possible explanation is that mulberry has replaced staple millets and pulses in Kanakapura, implying that the figures provided are merely representative of crop cycles within a particular season. Nevertheless, this leaves scope for further research.

The vast majority of sources considered focus on Mysore and Bangalore as primary silk hubs, as a result of which, information about Ramanagara is mentioned in passing regarding Karnataka's sericulture industry. One of the strengths of our sources under this category is abundant historical information regarding the early beginnings of the industry. For instance, Maxwell and Ensorge (2016) specify the role of the number of experts and advisors, in addition to state authorities, in fostering the Mysore silk industry at large. While this provides potential leads to our research, there is no mention of Ramanagara specifically. One of the reasons for this

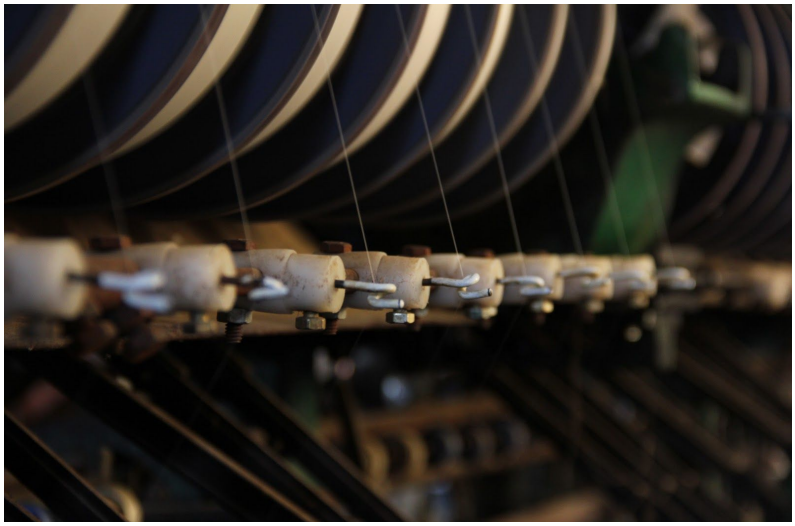
may be that the origin and growth of Ramanagara itself are relatively recent and emerged in the midst of the larger silk manufacturing industry, in the year 1790, as mentioned by Campbell and Stanziani (2019). Such assumptions and inferences made from the text can be only addressed on-field through interviews (both taped and informal) and non-participant observation.

Both trends and ambiguities regarding the social factors of the industry are evident in the literature. Some mention of trends includes the presence of child labour, the domination of Muslims / SCs / STs workers in reeling (which is poorly paid and often includes hazardous work conditions), and that of Hindus in comparatively well-to-do segments such as weaving or twisting. However, an important point noted by Reddy (2001) is the ambiguity regarding the social nature of Ramanagara's sericulture industry in empowering women through child labour. He notes that in addition to being an employee themselves, many female workers bring their own children to the workplace from a young age, which acquainting them with the nature of work and thus facilitating child labour. This leads to a dual purpose of women in the industry as they provide both manual and reproductive labour; which enables profits for the industry and her family while compromising upon the well-being of her child.

On one hand, perspectives such as the above-cited one enable an understanding of the roots and philosophy behind child labour in the industry (as well as other social factors, by extension). However, it is unclear as to whether child labour is sericulture-specific, the degree of prevalence it holds depending upon caste, class, and religion, and whether it is as a result of the failure of law implementation on the whole or only within a certain social/socio-economic category, all of which are briefly mentioned in the literature but lack insider perspectives. For this reason, overlap and extent of social and economic factors of child labour can be further explored.

Overall, our source is significant to providing sufficient background into our three areas of inquiry, which can be further explored through (1) the details into policies and claims of sources, and (2) recent changes since these sources were published.

Chapter 3: Observation



Section 1: Significance of Silk Production to Ramanagara

The prestige of Ramanagara's silk industry was reaffirmed through on-field interviews (both recorded and non-recorded). Among numerous interviewees, Mr. Swamy Vivekananda, the district head of sericulture interviewed, asserts that Ramanagara holds the only established and government-controlled silk market in India, while smaller ones are scattered across Channapatna and Kanakapura. Moreover, silk from Ramanagara has the highest value in India (followed by that of Devanahalli). Cocoons of the market are sourced from across Karnataka, from 50-280 km away from Ramanagara (personal communication, February 11, 2020). Imtiaz and his brother mention that the silk yielded from their factories is transported to Banaras, Tamil Nadu, Andhra Pradesh, and Chikkimangalur, among other locations (personal communication, Feb 13, 2020). Mr. J.M. Basaiah, the deputy director of sericulture who was interviewed, mentions that the concentration of reelers in Ramanagara incentivizes rearers to sell their cocoons in the district. The auctions involve 4000-5000 sericulture workers in total, consisting of both rearers and reelers (personal communication, February 10, 2020). These claims are complemented by the interview findings of a sericulture scientist from the Central Silk Technological Institute (Bangalore), who states that Ramanagara is involved with silk making for over 200 years and involves 1500 workers (personal communication, February 14, 2020).

Contradictory to these views, Bhagya, a female Hindu reeler who was interviewed, sees little scope in her work. While she is satisfied with her own income and duties as a cottage

industry worker, she would prefer her children to engage with work uninvolved with sericulture (personal communication, February 13, 2020).

Section 2: Cocoon Types, Pricing, and Quality Determination

Cocoons sold at auctions are of two types: white (CSR2 X CSR4) and yellow (CB Gold M). White cocoons are more expensive and harder and are softened by chemicals, while yellow ones are bigger and fluffier. The yellow to white ratio of cocoons sold is 25:15. Cocoon prices are based primarily on quality, which is in turn based on the breeding period of silk moths (influenced by the atmosphere and climate). During a visit to the ARM factory, Sanaullah Khan states that while yellow cocoons are more resilient white cocoons are of better quality. Thus, white cocoons are needed in larger numbers to compete internationally (personal communication, February 10, 2020)

Through miscellaneous interviews at the Ramanagara cocoon market, it was found that the quality of silk cocoons itself is determined through the length of the silk thread and species of the moth. Longer silk threads are believed to be better in quality. Cocoons are often ‘cut apart’

for quality testing, and once superior cocoons are chosen, hot water is used to kill live worms within and loosen up silk threads for the chosen cocoons. Quality testing in auctions is done manually, by government-appointed officials who require a minimum of 5-6 years of experience prior to hiring. Quality checkers learn informally through observation and on-field experience, and training new employees and freshers are not considered or preferred. One of the drawbacks of quality testing is that there is a lack of standard or government prescribed guidelines that determine cocoon quality, which may be taken advantage of to boost profits.

During auctions, cocoons are transported from green shelves to blue baskets. The cocoon market room has a metal cage at the end where chosen (bid) cocoons are placed. The cage also has weighing scales used to determine cocoon prices in bulk. Additionally, large electronic weighing scales are present which mention the (1) lot number, (2) basket number, (3) net weight, (4) rate/amount charged of the concerned batch of cocoons. An appointed official uses a computer to view cocoon rates and manufacture bills, overlooking the weighing scale. Every purchase is mandated to be accessible to the Karnataka state government. The cocoon market also has three screens showing the rack number and corresponding price of cocoons depending upon their quality.

Cocoon pricing is dependent on auction rates, and are hence often last-minute decisions made by sellers. Higher quality cocoons are produced less in quantity, owing to which white cocoons are sold at a higher price than yellow ones. Salman Khan, a reeling factory owner interviewed, observed a rise in cocoon rates over the past year, which has resulted in losses incurred by reelers while profiting farmers. Losses among reelers have been consistent since October 2018 to the time of the interview (personal communication, February 11, 2020). Additionally, Basaiah mentions in his interview that silk prices are primarily a result of demand and supply forces, moreover claiming that the average price range for one kg of silk lies between the price range of 400 – 600 INR (personal communication, February 10, 2020). Furthermore,

Sashikala, a 39-year-old Hindu woman farmer interviewed, notes a steep rise of cocoon prices from 100-150 INR to 400-450 INR in the past two years. While there exists a yearlong demand, she claims that it declines every four years, when the government introduces incentives for rearers and reelers to prevent stagnation in the market (personal communication, February 12, 2020). It must also be noted that fluctuating rates of cocoon production unevenly affect workers across stages of silk production. Imtiaz and his brother, both of whom are factory owners, also mention a steep rise in silk cocoon rates from 450 INR per kg to 600 INR per kg, which profits rearers (the sellers) but subjects losses upon the reelers (buyers). This may be further worsened by the mandatory commission due to which reelers are required to pay the government of 1,500 INR per month (personal communication, February 13, 2020).

The last addition to the above findings can be sourced to the same sericulture scientist mentioned above, who compares India's silk production to that of China. He affirms the variation in rate and quantity of silk is based on plant type, season and geography. China is the highest producer of silk as of 2019 (1.2 tonnes) as their land, output, and profits are government-controlled, each of which contributes to its GDP. Government-owned land also implies that farmers are not given any option apart from tending mulberry plantations. Moreover, while a majority of industries in China use Automatic Reeling Machines (ARMs), which thus produce superior quality silk, the latter is sold to India cheaply under the Chinese brand which enables profits through mass sales. Such a scenario contrasts with that of India wherein land is privately owned. With regards to saree weaving specifically, 85% of silk produced (constituting between 250g - 1000g of silk) per load is used for one saree. They are

marketed by colour and design rather than weight. In the past decade, newer technology has enabled an improved quality and efficiency of silk production. For instance, while one kg of silk required 15 kg of silk cocoons a decade ago, it can be produced with six kg of the same today (personal communication, February 14, 2020).

Section 3: Demographics of the Industry and its Implications

Our on-field findings in this section largely coincide with what is mentioned in literature. Salman Khan states that Muslims occupy 65% of Ramanagara's population. In his opinion, Hindus and Muslims of the district thrive in harmony, with no evident religious partiality or inequality (in employment or otherwise). Workers are free to be involved in any sub-stage of sericulture production as per their will. He further states that the dominance of Muslims in reeling can be traced back to the ancestral ties of the community in the sector since British rule. Muslims of later generations saw little point in questioning the existing structure, owing to which they often took up their parents' factories or replaced them as reelers in other cottage industry units. Jayanth Rao, one of the few Hindu reelers of the town, mentions consistent competition

with Muslim workers, who significantly outnumber those like himself. Muslim reelers hence hold a significant advantage over kinship and familial ties in securing their place in the reeling sector. He estimates that of the 80-85 reelers in his industry, merely 15-16 are Hindus like him. Irrespective of this statistic, he believes that wages are determined by the nature and duration of work done and are independent of social sanctions (personal communication, February 13, 2020). This fact is affirmed by the sericulture scientist at CSB, who states that the quality of silk produced is a key determinant of workers' wages. He also states that as receivers of government subsidies are determined mostly by financial need, the creamy layer of the industry is prioritized.

Our on-field interviews elucidate the roles of formal and informal sanctions for employing workers. Multiple reelers of the cocoon market regard reeling as an 'inherited profession', as the skills they learn are mostly owing to observing their family members in similar (or the same) roles. Sashikala cites many learnings through her husband. For instance, she learned that the best yield of mulberry leaves is produced throughout the summer (personal communication, February 12, 2020). Along similar lines, Bhagya mentions the significance of rapport to reelers. Her mother imparted reeling as a job skill to both herself and her sister. She further mentioned that her sister's connection with the owner of another factory she works with was also a crucial factor in maintaining her job (personal communication, February 13, 2020). Additionally, Ramesha, a Hindu mulberry farmer who was interviewed, learned his daily tasks by observing his parents in the same occupation (personal communication, February 12, 2020). Jayanth Rao states that this is particularly significant to Muslim families, which comprise of 16-18 members on average, each of whom often contributes to the family business (personal communication, February 13, 2020).

While our group was able to gauge the role of informal sanctions at a grassroots level, we also understood how government-mandated schemes enabled employment and training. The sericulture scientist interviewed affirms that since inception, the Central Silk Board (CSB) proposed a 10-day program for reelers and businessmen to provide them with the technical expertise required to enter the industry. They are also guided through the first 3-4 months of their occupation in the quality production of silk. Unfortunately, our group was unable to obtain comments on this training from sericulture employees themselves, as it was found through the last leg of our research. There was also no mention of the latter throughout previous interviews or discussions during our fieldwork.

Section 4: Conditions and Challenges of Sericulture Employees

The interviewed reelers at Ramanagara's cocoon market mention frequent irregularities in their work, of which the most persistent one is the unpredictability of their work schedule. While workers have no complaints about the nature of their work or job schedule, many would prefer alternate sources or sectors of employment. For instance, Bhagya mentions financial pressure as a key motivator in getting involved in sericulture. She moreover has three children to

look after, and cannot take up any alternate sources of employment considering her lack of education or alternate opportunities (personal communication, 13 February, 2020). Such financial concerns are also common to reelers interviewed in Ramanagara's cocoon market. Basaiah mentions that internet disruptions and delayed delivery of receiving cash are common complaints of reelers. The auction is moreover limited to licensed rearers and reelers, among which the reelers are required to deposit 5,000 INR as a token advance to the government to activate their worker ID (personal communication, February 10, 2020). Imtiaz and his brother mention that they are required to give 1,000 INR as a commission to the government for every 1,00,000 earned per owner, which has gradually reduced their profits with little to no government return (personal communication, February 13, 2020). This contradicts the claim made by the Hindu reeling factory owner Jayanth Rao suggesting that there are no commissions of any sort charged by the government (personal communication, February 13, 2020) but, on the other hand, is congruent to what was suggested by the Sericulture Scientist at CSB who admitted to the government charging commissions and using the money for the welfare of the sericulture industry (personal communication, February 14, 2020). Imitiaz and his brother also claim to have sold one of their factories in order to keep the business running. They additionally emphasize the role played by national politics in their finances. The Congress government used to provide a subsidy of 100 INR for every 1 kg of silk cocoons bought, which has however drastically reduced since the BJP has been appointed. It was only for the past 6-7 years when the lack of subsidies wore off their effect (personal communication, February 13, 2020).

Our research also revealed that the conditions of male labourers are not homogeneous across the reeling and rearing sectors. We were able to understand the differences across both of these sectors by adopting an intersectional approach, considering gender, caste, and the nature of work done across either sector. The daily schedule of male rearers involved collecting leaves, feeding and maintaining

silkworms, and selling silkworm eggs. They stay throughout the auctions to maximize their cocoon sales, until the sold cocoons are weighed, after which their responsibility is handed over to Muslims. Ramesha frequents the market regularly, depending on cocoon availability. He uses Chandrike (an environment-friendly cocoon stand made of mulberry sticks) to store silk cocoons. At the time of the interview, he mentions the rate of silkworm eggs to be priced at 35,000 INR (per 100 eggs) which he purchases every 20 days. These grow into cocoons within a span of 25 days. Ramesha mentions that the lack of an established marketplace for egg purchase is a challenge to him since he needs to travel further in the village to purchase the same. He compares the eggs of Ramanagara to Channapatna (a neighbouring town which is also well-known for silk production), stating that while their eggs are of similar quality, cross-breeding is more common in the latter (personal communication, February 12, 2020).

Ramesha's farm is driven through the work of five female labourers (all of whom are 40 years or above). Their tasks often encompass cleaning, yet may vary depending on the needs of their employers (such as Ramesha himself). Labourers are provided with tea and are responsible for bringing their own food. Their payment rates are also fixed and independent of any variation in assigned tasks they carry out through the day. They are reportedly regular with work and often arrive even on short notice (particularly two days prior) (personal communication, February 12, 2020). Although while Basaiah does mention of sparse complaints by the rearers and reelers partaking in the auctioning process in the cocoon market (the issues primarily being Wi-Fi connectivity or delays in receiving cash) (personal communication, February 10, 2020), Ramesha does not indicate any specific obstacles to his work (personally, or representative of other rearers) (personal communication, February 12, 2020).

While our group gained multiple insights into the lives of male laborers (through interviews, as well as conversations at the cocoon market), we had fewer opportunities to understand those of female workers. The first insight we had into the latter was through an interview with Sashikala and Bhagya. Sashikala's schedule requires her to work independently on the fields (as a result of her husband's demise) for an average of 8 hours per day, beginning from 10 am. The labour she carries out involves cutting mulberry leaves and applying a pesticide to the same, feeding silkworms, and selling cocoons at Ramanagara's auction market. She is occasionally helped by her son, who is otherwise uninterested in sericulture. Despite the lack of

support on the pretext of being a widow, the market treats her well. Her reliance on the sericulture industry is similar to Bhagya's case, who lacks a current alternate avenue to reeling (although, she briefly mentions working with rearing earlier). Both Sashikala and Bhagya mention general satisfaction with their job requirements and wages, which they state to be (more or less) equal to their male counterparts (Sashikala, personal communication, February 12, 2020; Bhagya, personal communication, February 13, 2020). Salman Khan additionally mentions in his interview that workers of both genders are paid equally in most factories. It is only in factories that employ gender-segregated labour wherein wages are differentiated (personal communication, February 11, 2020). His claim connects to the situation of Jayanth Rao's factory, in which men are paid 320 INR (100 INR more than women) as they are permitted to take lesser holidays, in addition to carrying out routine cleaning at the end of the day (Jayanth Rao, personal communication, February 13, 2020).

Section 5: Effects of Privatization and Government-led Initiatives

Nearly all of the reelers interviewed by our group indicated that the privatization of sericulture has resulted in losses for them. For every 1,00,000 INR of profits earned, reelers are required to provide 1,000 INR to the state government towards taxes. The detrimental effects of privatization can be understood firsthand through the experiences of Baseer Ahmed, a 52-year-old reeler who has been engaged with sericulture for 25 years. As the losses of his cottage reeling unit accumulated, his rates simultaneously worsened, driving him to no option but to sell eight kgs of his silk at the price of one kg. Thus, he eventually had to close his factory. He moreover recalls that earlier laws (until 2005) permitted only government registered silk reelers to participate in the market, thus banning unauthorized production. However, the recent repeal of the law allows farmers to sell their cocoons in avenues apart from those which are government-sanctioned. As a result, government-imposed regulations only apply to those who wish to sell cocoons through the auction market, and not to others. The state government also charges a 1% commission to those selling through the market (personal communication, February 10, 2020).

In contrast to a majority of views provided by Muslim reelers, Jayanth Rao mentions overall satisfaction with government policies. He particularly mentions the benefits of newer

loans, subsidiaries, and machinery provided to reelers, without demands of commission. Unfortunately, the up-gradation of technology in reeling (through ARMs) and a steep rise in the number of Muslim reelers has contributed to a stagnation in the profit levels of his industry. While Rao does not point out specific policies enabling profits in his own factory, his interview indicated an overall approval of government-sanctioned programs and initiatives (personal communication, February 13, 2020).

Section 6: Child Labour in Ramanagara's Sericulture Industry

Our on-field observations provided an array of heterogeneous views regarding child labour in Ramanagara's sericulture industry. Firstly, Salman Khan mentions that those seeking employment are primarily aged 20 or above, as they complete their education and increasingly face pressure to contribute to their household income. Thus, most workers (in reeling units) are between the ages of 22-40. He furthermore asserted that any able-bodied individual can work out of their own will as there is no government prescribed age limit to working (personal communication, February 11, 2020). His idea differs from that of the sericulture scientist interviewed from the central silk board (CSB) in Bangalore, who mentions that only those of 18 years and above can legally be employed (personal communication, February 14, 2020). Both of these views differ from inputs we received in Ramanagara's auction market, in which reelers mentioned having participated and worked in the industry since they were children.

While child labour may not be as common today, our team observed one child (around 6-7 years) working in an ARM reeling unit. Moreover, Ramesha mentions in his interview that his 8-year-old son voluntarily helps him in rearing, although he does attend school simultaneously (personal communication, February 12, 2020). This example of Ramesha's son strengthens our earlier findings of the role of informal sanctions in the functioning of Ramanagara's sericulture industry

Chapter 4: Inferences and Analysis

Section 1: Relevance of the "Silk City" Title

Our findings from interviews with government officials and authorities of the industry significantly overlapped with that of our secondary research. Firstly, Basaiah mentions that Ramanagara holds a concentration of 1200 reeling sites, of which 11 are driven by ARMs (Automatic Reeling Machines). Although ARMs are only a recent introduction and cannot quantifiably match up with the number of cottage industries, they generate a demand of 45 metric tons of silk produced in the town per day. In total, 35 metric tonnes of silk cocoons are transacted, which amounts to 1,00,00,000 - 2,00,00,000 INR per day. The significance of ARMs to the industry demonstrates an early juxtaposition of older forms of production (cottage industries) with newer ones, which portrays Ramanagara's evolution from a small town on the margins of the city to one which fringes on development. Furthermore, the economic value of silk produced may also justify the prestige of Ramanagara's cocoon market, which attracts close to 4000-5000 members per day (inclusive of both reelers and rearers) from in and around Karnataka, Andhra Pradesh, and Kerala (personal communication, February 10, 2020). This prestige is also stressed upon by the sericulture scientist, who mentions Ramanagara to be a 200-year-old industry, of which 1500 of its labourers are directly employed in sericulture (personal communication, February 14, 2020). These findings provide a detailed insight into the findings of Purushotman and Patil (2015) who state that the town contributes to half of mulberry silk production in India, in addition to holding three regulated silk cocoon trading markets. They emphasize that these are the main determinants of the 'silk city' title granted to the town by the district headquarters.

The significance of Ramanagara as a silk cluster in Karnataka can be connected to the economic evolution of small towns in India. Purushotman and Patil (2015) state that most small towns in India are categorized under 'census towns', which have a population between 50,000 to 1,00,000 people. They remark that the popular focus on cities as urban hubs discounts the

growing role played by census towns, which accounts for 30% of urbanization in India between 2001-2011. Such non-metro urban towns account for forms of 'low-end, bottom-up, indigenously evolved urbanization', which forms a kind of 'middle India', such as that witnessed through independent economic drivers in Ramanagara. They strengthen this claim through a statistic regarding acceleration in the town's GDP, from 12% in 2009 to 33% in 2015.

Apart from the macro-level functioning of the town itself, the title is also fitting to the informal sanctions of Ramanagara's sericulture industry which is often dismissed. Sinha (1989) mentions that from the years 1985-86, the number of persons directly involved with the industry amounted to 19 lakh on a full employed (250 day) basis. Of this number, 11 lakh persons were directly involved with sericulture while eight lakh were involved with the post cocoon process. However, the indirect employment in the sector (constituting primarily familial connections of labourers) makes up one-third of the direct sector, hence implying that a total of 25 lakh persons in total are involved in the industry. He further asserts that over 90% of the employment is made up of landless and marginal farming families, who rely on hired or familial labour. These findings were observed on a grassroots level during our on-field research. Sericulture forms the fabric of Ramanagara by penetrating into the daily lives of workers. Reeling cottage industries are often within the homes of workers themselves which illustrates the physical or spatial integration between work and home. Moreover, each of these workers often rely upon the significance of sericulture in their families to gain employment in the industry.

In contrast to the emphasis of the industry to Ramanagara as depicted above, the foreshadowing decline of the industry was also an evident theme of our research. Most of the reelers at Ramanagara's auction market held uncertain or unfavourable attitudes towards the future of the industry. Each of these reelers (apart from Jayanth Rao, a Hindu reeler), mentioned in their interviews that they would prefer their children to be employed in an alternate occupation to sericulture. This is especially evident in Imtiaz's interview, wherein he mentions the influence of consistent losses which forced him to eventually close down his factory. These findings can be backed by Arasu (2018) who stresses the losses faced by cocoon farmers and reelers since 2015. In this article, Gautam Gowda (a sericulture farmer and the president of Ramanagara district sericulture farmer's welfare association) states that the price of cocoons had hit an "all-time low" in 2015, due to farmer debts and eventual suicides. Although the incumbent minister for

sericulture (as of 2018), SR Mahesh, announced that Mysore silk sarees would be sold at half the price by the Karnataka Sericulture Industries Corporation (KSIC), its implementation was ceased after a month due to disturbances.

Other reasons for the declining nature of the industry mentioned in the article are heavy rainfall in silk-producing regions, the five percent GST imposition on silk yarn and fabric, and the preference for Chinese-imported silk yarn. Firstly, rainfall reduces the quality of cocoons by adding to their moisture content, thus ruining their dryness and softness. Secondly, the GST imposition is passed down through the supply chain, owing to which the brunt is borne by farmers and reelers. Thirdly, Chinese imported silk yarn is preferred by weavers owing to its low price and better quality, thus subjecting the domestic market to peril.

While the reelers (and rearers, to an extent) see no scope for the future of the industry, the state department of sericulture and the Central Silk Board (CSB) perceive these challenges as a temporary setback. The commissioner for sericulture development of Karnataka, K.S. Manjunath, attributes the fall in prices to a surplus of supply, in addition to excessive rain, and claims that subsidies have been provided to farmers to enable their sustenance. In the article, Basaiah also states that low rates have also reduced profit margins for farmers.

In light of both on-field data and literature, our findings show how Ramanagara has historically (and to an extent, even today) been playing a significant role in silk production as well as providing a sole avenue of employment. Recently, the gradual loss of hope in the industry points to the significance of ARMs (Automatic Reeling Machines) and government-driven subsidies in the sustenance of the farmers. However, the roles of these farmers (and by extension, other workers) in the industry are almost nearly undetermined by merit or interest. It is rather the embeddedness of social factors including caste, class, gender, and religion, in determining their positionalities as workers, which is elaborated in the following section below.

Section 2: Role of Caste, Class, Gender, and Religion in the Industry

While our primary stakeholders in this research project included Muslim and Hindu workers, we also marginally focused on female labourers and child labourers. The most dominant theme which emerged through both on-field observations, as well as literature, was the

predetermined role of religion and caste in the allocation of workers to a certain segment of the industry. Throughout our on-field visits to both mulberry farms and cottage industries, it was clear that Muslims and lower-caste workers were concentrated in the reeling industry, while Hindus were involved with silkworm rearing and mulberry plantation work. Jayanth Rao, being one of the few Hindu reelers in Ramanagara, mentions stiff competition from his Muslim counterparts. He specifically states that around 80% of reelers in Ramanagara are Hindus (personal communication, February 13, 2020). In another interview, Salman Khan mentions that while there is no such law which limits workers from a non-dominant religion from working with either sector, the strength of familial and kinship ties often overrides their choice between rearing and reeling (or any other form of employment, even apart from sericulture) (personal communication, February 11, 2020). Another such example is that of Sashikala, who lives in a Hindu-dominated area and works with other Hindu female rearers like herself.

Campbell (2019) provides a historical insight into the reason for such segregation. As production in cottage industries occurs in small rooms in the owner's home or in passageways outside the same, the production space is often dark and damp, and poorly ventilated. Poor working conditions and low wages reinforce the physically and ritually polluting nature of the silk reeling sector. This not only reinforces the poor socio-economic conditions of those involved in the sector, as stated by Campbell (2019) but also contributes to the systematic marginalization of Muslims and scheduled castes who have been involved in the sector for generations. Furthermore, Kadekodi et. al. (2008) states that while persons from scheduled castes may suffer various disabilities (both physical and social), their poverty is often exacerbated by social identity. It is hence a combination of economic and health factors that affect their lifestyle

and standards of living. Nevertheless, the sericulture industry provides subsistence to those who would otherwise be in dire straits.

Our primary research also gave light to differing perceptions on child labour, through the interviews of Salman Khan and the sericulture scientist at CSB), as well as through our on-field observations. Our group noticed a child labourer (who we estimate to be around six years of age) working in the ARM factory, while in other sites, children were present though not actively working. Reelers in the auction market also mentioned working since childhood. Additionally, Ramesha mentions that his eight-year-old son voluntarily helps him with farm work outside his school-going hours, and aspires towards working with the sericulture industry in the future (personal communication, February 12, 2020). This contrasts with the information mentioned by the sericulture scientist (from CSB), who states that the government mandates only those above the age of 18 to be legally employed. Our on-field findings can be complemented by the findings of Tucker et. al. (1996) who state that the governmental failure of applying child welfare laws coincides with heavy subsidization and regulation of the industry. The source further elaborates on the pointlessness of subsidies and incentives across phases of silk production, considering that Karnataka's sericulture industry itself holds a total of 2,50,000 bonded child labourers. Local law enforcement officials unfortunately actively assist perpetration of slavery of younger workers, by either complicity in criminal abuses, or at worst, actively participating in the same. This source further claims that multiple police officers return children or adults to a 'bond master', in order to ensure that they actively finish paying their debts, which thus symbolizes how they not only fail to enforce the law but often break it themselves.

Our third finding considers the influence of gender in occupational roles and divisions. Within reeling units particularly, the gender of workers was a determinant of the nature of work carried out and consequently affected the wages received. Salman Khan mentions that in his factory, male and female labourers carry out the same work, as a consequence of which they are paid equally (personal communication, February 11, 2020). Jayanth Rao however, mentions that men and women are paid differently in his factory due to differences in the work done, as well as the number of holidays given (personal communication, February 13, 2020). Men stay back to clean at the end of the day and also receive fewer holidays, and hence are paid higher. However,

one ambiguity within our on-field research was whether women have the option of carrying out the same amount of labour as men, thus giving them wages on par with men.

Bhagya and Sashikala mentioned satisfaction in the nature of their work and wages provided in both of their interviews. However, they provided no mention of women in authoritative positions in the industry (Sashikala, personal communication, February 12, 2020; Bhagya, personal communication, February 13, 2020). However, through our observation, it was evident that women occupied primarily marginal roles in either reeling or rearing. Kadekodi et. al. (2008) asserts that women were uninvolved in the 'basic chain' of silk production, including cocoon sales, and were often assigned to sidelined tasks such as picking leaves or rearing silkworms. Moreover, despite being primary rearers, they did not receive training on improved rearing techniques, newer fodder, or up-gradation of the amount of time invested in rearing. The same source also comments upon gender bias in Karnataka's sericulture programs assisted by the world bank, which systematically denied the involvement of women in silk rearing and farming activities. A targeted study revealed that their roles were mostly within the home, involving mulberry plants, feeding silkworms, and removing waste (Kadekodi et al., 2018).

Finally, our analysis of this section considers the dynamics between upper and lower socio-economic classes. Through our interviews and on-field research, we found that those of higher socio-economic strata owned and ran reeling factories in their homes, while those from lower backgrounds were employed by the same. Moreover, those who were most economically well off in the town could also afford Automatic Reeling Machines (ARMs) and receive subsidies for the same. Moreover, the superior nature of silk produced through ARMs directly relates to a growth in profits towards sericulture, eventually leading to the gradual decline of cottage industries which are deemed inefficient. The role of economic class dynamics in Karnataka's sericulture industry is only sparsely mentioned in the literature, with a greater emphasis on its role in India at large. Moni and Misra (2009) indicate that the latter has been a 'money-spinner' to a number of middle-class families in Andhra Pradesh. The source also emphasizes the significance of sericulture to enablement of socio-economic mobility, economic independence of lower castes, and the disruption of traditional occupational patterns, particularly through equal competition on a market level. Upward and downward mobility of workers is also a direct function of their wages which changes depending upon the changing structure of the

industry itself. This ties into our third dominant theme of our findings, which is the influence of neoliberal forces in Ramanagara's sericulture industry.

Section 3: Role of Neoliberal Forces

The most dominant theme under the umbrella of neoliberalisation of the industry was that of government involvement. This can be further understood through three sub-themes, namely, India's global position in the silk market, the role of government incentives in indigenous silk production, and the opinions and effects of such interventions on a grassroots level. Firstly, the sericulture scientist (who prefers to remain anonymous) interviewed at the Central Silk Board (CSB) states that neo-liberalization and privatization are significant to India (the second-largest global producer of silk following China), in contrast to China which continues to be dominated by government policies. As land in China is government-owned, farmers are not provided with alternatives to growing silk. However in India, privately owned land allows farmers to grow crops as per their will. He also elaborates on the second theme, which covers the role of government incentives in the promotion of indigenous silk in India (personal communication, February 14, 2020).

Secondly, our group explored governmental incentives that had been passed to promote indigenous silk in India. Kadaikodi et. al. (2008) takes note of the role of sericulture as a core component of certain anti-poverty initiatives, passed by both the state and central government. The source also mentions the implementation of a sericulture task force introduced by the state government sometime during the late 20th century, in order to eradicate the invisibility of women workers in the sector. Moni and Misra (2009) also note that government intervention has enabled the weavers of Karnataka's Chittoor district to purchase silk at a lower price than the initial one owing to the role of middlemen in the industry. Furthermore, silk reeling activity in the district has risen, which in turn led to greater activity in the raw silk market and cocoon market, particularly in areas with a higher concentration of silk reeling. Despite such initiatives, the source also claims that infrastructural facilities are inadequate, and peoples' responses to reeling activities are insubstantial. This may further suggest a reason for low levels of raw silk production.

The sericulture scientist (who prefers to remain anonymous) interviewed at CSB speaks of governmental initiatives in comparison to China, as well as in reference to ARM units. He claims that the Indian Government prefers ARMs as opposed to cottage based industries, particularly in comparison to China as a model for silk production wherein a significant majority of silk manufacturing units are ARM driven. He further asserts that ARM units have a significant advantage over cottage driven industries, owing to which China ranks above India in global silk exports. Government driven change is thus a structural process of silk production, through subsidies given to factory owners who can afford ARMs (personal communication, February 14, 2020).

The government incentivizes ARMs in an attempt to outnumber cottage based industries, as a result of which the workforce can accelerate both the quality and quantity of Indian silk produced. Moreover, reelers in Ramanagara by default prefer working in ARMs as opposed to cottage based industries (due to better pay and working conditions). The establishment of a single ARM attracts workers who were initially working in cottage based industries rather than hiring fresh employees. This leads to a general transition from cottage industries to ARMs (where new ARMs swallow up existing cottage industries thus substituting them). This inadvertently results in a greater workforce dedicated to ARM silk production, which ultimately leads to greater production and improvement in the quality of silk. Such an initiative could, in turn, enable India to compete in the global silk market. To ensure that weavers prioritize Indian silk over Chinese silk, the initiatives taken include: (1) the imposition of import duties on Chinese silk, (2) active efforts to advertise the merits of Indian silk to weavers, and (3) the introduction and funding of Automatic Reeling Machines (ARMs).

Thirdly, our team investigated the opinions and effects of government intervention at a grassroots level. Throughout auctions as well as individual interviews, it was evident that Reelers themselves see a future in ARMs (considering the role of government subsidies). For instance, Imtiaz plans to buy an ARM in his factory, and Jayanth Rao wishes to introduce ARMs in his own factory himself as opposed to being involved with an ARM factory as a worker. Apart from ARMs, the feedback concerning e-auctions at the silk cocoon market was also dominantly positive. They were first introduced in 2015 (Joseph and Kamnath, 2017) when wifi issues and technology operation were the main complaints by users (J.M Basaiah, personal communication,

February 10, 2020). E-auctions also introduced predetermined rates for the first time, prior to which rates were determined by open bidding. Rearers and reelers have two opposing viewpoints on e-auctions. While they both cite that illiteracy and transactional errors are some common disadvantages, rearers feel that high-quality cocoons are being quoted at lower prices. However, reelers felt that the cocoon rates have become more organized and fair since the introduction of e-auctions.

Moreover, governmental provisions of Minimum Support Price (MSP) are passed once in every four years, when cocoon prices hit an all-time low. The final example of government intervention can be seen through The Karnataka Silkworm, Seed, Cocoon (Supply, Distribution, and Control) Distribution and Control Amendment Act passed in September 1979, it requires producers of raw silk to sell only through an official silk exchange established in Bangalore (Charsley, 1980). Salman Khan mentions that the above-mentioned law, however, was repealed around the year 2006, which gave the reelers the freedom to sell their silk wherever they wished and can be further seen as a positive step towards neoliberalisation (personal communication, February 11, 2020).

Chapter 5: Conclusion

Ramanagara- A product of 200 years of effort sustained by members of the sericulture industry

Ramanagara is an amalgamation of social, political and economic layers that manifests itself in different forms in its most significant enterprise, which is the Sericulture Industry. To sum up the findings of this research, the three questions that started off this research shall be answered again in light of the congruence or contradiction noticed in the on-field findings as opposed to the findings in the existing literature.

What makes Ramanagara the "Silk City"?

Ramanagara is a 200-year-old town that has been into silk making since its very inception. It houses the second largest government-regulated silk cocoon market in all of Asia which has been functioning since the year 1982. The said market only allows rearers and reelers that are licensed by the government to participate in the auctioning. All the reeling units in Ramanagara alone generate a demand of 45 metric tonnes of silk cocoons on a daily basis. There are 4000-5000 people auctioning in the market every single day, with rearers coming from as far as Tamil Nadu, Kerala, and Andhra Pradesh to sell their cocoons to the huge demand generated by the reelers encompassing a significant proportion of the population in Ramanagara (J.M. Basaiah, personal communication, February 10, 2020; Sericulture Scientist, personal communication, February 14, 2020). As indicated by Puroshotaman (2019), there are three silk cocoon markets with the headquarters at Ramanagara alone.

Through our findings, it is evident that the significance of reeling is far greater than rearing. As indicated by Jayanth Rao, a Hindu reeling factory owner, 80% of all the reelers in Ramanagara identify as Muslim (personal communication, February 13, 2020). At least in the

case of Muslims, reeling is a family business where through informal sanctions, the skill of reeling is passed down across generations. This ensures a consistent labour supply thus putting Hindu reelers (a statistical rarity) such as Jayanth Rao himself at a challenge of keeping up with the competition.

Thus, we see great importance in the role of informal sanctions such as familial training in the sustenance of the reeling units which is the most significant part of the Ramanagara Sericulture Industry. And while we do see a general level of skepticism in the interviews conducted on-field of Muslim factory owners such as Imtiaz and his family in the sustenance of sericulture as an industry (personal communication, February 13, 2020), reelers, in general, see a promise and a future of the industry in the transition of reeling from cottage based to ARM-based.

It is important to note that the government has not only established but also works towards actively maintaining the functioning of the silk cocoon market in Ramanagara through licensing its participants for credibility purposes, charging a certain percentage of the money earned by the participants of the auction as commission for the maintenance of the market and supporting the entire industry via Minimum Support Price once in every four years, when the silk cocoon rates inevitably experience an all-time low (J.M. Basaiah, personal communication, February 10, 2020; Sericulture Scientist, personal communication, February 14, 2020). This indicates the significance of Ramanagara's contribution to the level of silk yield to Karnataka, the largest producer of raw silk in India. As indicated by Vishakanta (2018), India contributes to 16.4% of the global raw silk production and we can conclude that Ramanagara has one of the most significant roles to play in the said production. The small scale labour intensive industry that sericulture is has been a significant employment generator for the Ramanagara populace. All of these factors contribute to Joseph and Kamnath (2017) referring to Ramanagara as the "Silk Capital of India", and the government of Karnataka conferring the title of "Silk City" to Ramanagara. This can be furthermore inferred through the role of social factors (caste, class, and gender) as well as neoliberal forces in shaping the industry, elaborated on below.

How do Caste, Class, Religion, and Gender manifest itself in Ramanagara's sericulture?

The indications by literature are congruent with our on-field observations on the existence of an occupational divide in terms of caste, class, religion, and gender. However, this is not to implicate the existence of discrimination made on these bases. It is rather, the power of informal sanctions which has propagated the transfer of the same sets of skills across generations. In Ramanagara's sericulture industry, demographic findings on the reeling sector indicate a concentration of Muslims and people of the lower castes (Vishakanta, 2018). As indicated by Joseph and Kamnath (2017), reeling is looked at as "ritually polluting" and the positioning of marginalized communities in this particular sector, as opposed to other sectors that host relatively higher castes is no coincidence. This rather is reflective of how the state policy reinforces the already existing marginalization by interacting with market structures and social affiliations. However, this is contradictory to our on-field findings where the factory owners of reeling units do not see reeling as downgrading in any social sense (even if they do have reservations when it comes to the low inflow of income). Salman Khan, a Muslim factory owner affirms that while reeling is predominantly a Muslim occupation and rearing a Hindu occupation, there is a sentiment of mutual respect that underlies all their interactions (personal communication, February 11, 2020). His statement is congruent to our on-field observations regarding the interactions at the Ramanagara Silk Cocoon Auction Market where there was no observed manifestation of a communal divide or unhealthy rivalry based on communal sentiment in any shape or form. Mohammad Imtiaz and his brother who are both Muslim factory owners, while upset about the losses incurred in the reeling sector, do not display any hatred towards reeling as a profession in itself. Moreover, as shown through Imtiaz's choice to employ Bhagya (a female Hindu reeler) as observed on-field, we can see that there is no discrimination made on the basis of religion when it comes to the hiring policy at least by Muslim factory owners.

The government policies, however, seem to be inclined more towards the rearers than the reelers which, as some reelers see it, could be reflective of a state policy biased towards a certain religious affiliation. As indicated by a Muslim factory owner, when BJP came to power in the year 2018, there were some changes in policies such as a reduction in subsidies, the introduction of government commissions coupled with a great increase in the silk cocoon rates, all of which

worked towards putting the reelers at a disadvantage. On the other hand, the rearers, which are known to be predominantly a Hindu dominated occupation are reaping the benefits of higher silk cocoon rates (personal communication, February 13, 2020). To add on to this narrative, Jayanth Rao, a Hindu reeler claims to not have to pay any form of commission to the government (personal communication, February 13, 2020).

There is a very evident gender divide as indicated in the existing literature and according to our findings at least when it comes to the reeling sector. We see that there are a lot more women working in the reeling cottage industry than men, however, there is unequal pay for men and women. Automatic Reeling Factory units prefer employing men too (which was also affirmed by our on-field observations) especially because they require lesser leaves, and can work for long hours which makes it possible for the owners to confer them with extra work such as cleaning up of the unit post the cocoon processing.

The employment of child labour was also observed but it was not as much as was indicated in the existing literature. While there are no existing legal policies that encourage caste, class, age or gender-based division of labour, these are perpetuated through hierarchical divides and social informal sanctions. To illustrate the above point, it helps to look at the fact that reeling for the most part is passed down as a skill in Muslim families across generations.

It is important to note therefore as indicated by Joseph and Kamnath (2017) that there are three dimensions that affect a factory owner's accessibility to the market, labour and the ability to negotiate higher profit margins:

- Political Affiliations- If the ruling party has a state policy led by religious lines, it would clearly lead to the benefit of the religion the ruling party favours over the other. This is

indicated in the contrast of the opinions of Jayanth Rao, a Hindu reeler who favours the schemes of the BJP government as opposed to all the other Muslim Reelers that were interviewed that were in opposition to the current government schemes.

- Religious Leadership- In an industry guided by informal social sanctions and observing the religious divide in occupational sectors, the role of religious leadership is crucial.
- Economic Power- In this dimension, we see the importance of class in the Sericulture Industry of Ramanagara. This division is mainly manifested in terms of affordability of the ARMs restricted to the economically well off reelers. ARM factories are superior to cottage-based factories as they produce silk of superior quality in greater quantities. As indicated by a Sericulture Scientist interviewed at CSB, the government awards subsidies on the basis of the quality of the silk yield sold to it, and in such a case, the ARM factory owners are able to avail higher subsidies than their cottage factory counterparts. Thus, with accessibility to higher profits, greater help from the government and the huge workforce that an ARM factory can accommodate, reelers from cottage based industries willingly leave their industry to join an ARM factory, and thus, ARMs also avail higher accessibility to labour at a time when the labour force, in general, is shrinking (as the current generation of reelers are trying to educate their children so that they do not have to continue a business which, in their opinion, is dying). Our specific findings pertaining to ARMs and governmental initiatives have been summarized in the following section concerning the role of neoliberal forces in the industry.

How have neoliberal forces since 1991 affected profits of sericulture in Ramanagara?

Neoliberalism can be defined as “an ideology and policy model that emphasizes the value of free-market competition” and is commonly associated with the cessation of government control over the market (Smith, 2019). Keeping this in mind, we see that the Indian government

has not completely embraced the values of neoliberalism as yet, but has occasionally taken steps that could be considered neoliberal. For instance, the cancellation of The Karnataka Silkworm, Seed, Cocoon (Supply, Distribution, and Control) Distribution and Control Amendment Act 1979 that made it punitive for any reeler to sell their silk yield to any party besides the official silk exchange established in Bangalore (Charsley, 1980) around the year 2006 as indicated by Salman Khan, a Muslim factory owner of a cottage based reeling industry. However, more often than not, heavy government involvement has been observed in the functioning of the sericulture industry of Ramanagara, and in that sense, Ramanagara so far has not received enough opportunities to be shaped by the forces of neoliberalisation. However, the said government involvement is directed towards the positive growth of the sericulture industry in Ramanagara. As indicated by a Sericulture Scientist interviewed at CSB, the government incentivizes ARM by providing subsidies to the reeling factory owners who can afford and are willing to purchase ARMs, award greater subsidies to better quality silk yield which is far more achievable by ARMs than cottage based industries and to protect the interests of the indigenous industries, the government also imposes an import tax duty on Chinese silk.

While the effects of the said government initiatives to incentivize ARMs can be deemed as positive in the long term health of Ramanagara's sericulture industry, it subjects short-term losses on cottage industry reelers unless they gain employment in an ARM factory. This is considering the fact that there is a strict quality criterion on silk yield set by the government, and it is only if the said yield meets the criterion that the reeler can avail for subsidies (which depend upon the quality of the same). A cottage reeling industry owner would find it far more difficult to meet the strict criterion of quality silk yield, in comparison to an ARM factory owner who has superior equipment which is capable of producing far greater quantities and superior quality of silk. Moreover, all the reelers need to pay a sum of 5,000 INR to be eligible to auction in the government regulated silk cocoon markets. The reelers are also expected to pay a 1% commission rate for every 1,00,000 INR earned by the sales of the silk yield to the government (Muslim Factory Owner, personal communication, 13th Feb 2020). Finally, as indicated by J.M Basaiah, the silk cocoon rates are also at an all-time high with sales being made up to Rs. 600 per kg of silk cocoons (personal communication, February 10, 2020). Thus, we see that without ARMs, the reelers are burdened with the unavailability of subsidies, unforgiving commissions,

and silk cocoon rates which makes them willing to leave their cottage-based factories and voluntarily look for employment in ARM-based ones. Our on-field findings attest to the issues addressed as Muslim reelers have admitted to being greatly dissatisfied with the high silk cocoon rates and government commission. The sericulture scientist at CSB painted a picture of the government collecting the said commission for the benefit of the reelers working in the industry, however, this picture is contradicted by the dissatisfaction with the high commission rates by the Muslim reelers.

An important point to note though is that the government and the reelers are in the common consensus of the fact that the future of Ramanagara's sericulture industry lies in its ARMs. The Sericulture Scientist at CSB claims that the government imparted formal training for two months to all those who are to be introduced to sericulture, however, this is contrary to our inferences from interviews of the reelers which suggested that they were introduced to sericulture through informal sanctions, i.e, taught by their family members who already were a part of the business. This is true of the rearers as well, as Sashikala, a mulberry farmer indicated that she too learned to rear silk cocoons and to grow mulberry crops from her late husband. Yet another contrast was noticed with the use of pesticides. The Sericulture Scientist at CSB indicated that the mulberry growers ensure that no pesticide is sprayed on the leaves as it would be harmful to the silkworms feeding on it, while on the other hand, Ramesha, a mulberry farmer admitted to using pesticides for his mulberry crops.

Having stated the answers to our three mentioned areas of inquiry as briefly as possible, the following lines attempt to establish connections between the findings of our three areas of inquiry, in addition to suggesting the scope for further research within the topic. Ramanagara, the "Silk City" consisting of rearers, reelers, and a government-regulated market to monitor their negotiations forms an entire ecosystem of its own around sericulture. Rearing is predominantly occupied by Hindus and reeling by Muslims. Sericulture is deeply rooted in the lives of its inhabitants and has lived across generations via informal sanctions. The rearers are relatively happier than reelers with the present state of affairs according to our present findings. The reelers and the government officials are in common agreement of the idea that if reeling is left to cottage-based industries, the reeling industry and therefore the sericulture industry in Ramanagara will reach an inevitable end due to tough competition from China always around the

corner. Neoliberal forces are not shaping the industry owing to heavy government involvement, however, the rearers and reelers are not against the idea of the said involvement itself; the reservations are mainly held by Muslim reelers on a few policies followed by the government such as charging high commissions and not offering enough subsidies. The future of Ramanagara's Sericulture Industry is seen in the greater establishment of Automatic Reeling Machine based factories by the reelers and the government alike, and the government is taking significant initiatives on that end. While the employment of child labour seems to have reduced in the reeling sector, it still has a skewed gender ratio as it employs a lot more women at cheaper rates than men. According to our findings, women in rearing seem to be happier with their occupation than in reeling, but speaking on religious lines, Hindus and Muslims both seem to be happy with their respective sectors. We further conclude that there is healthy competition not characterized by any form of religious antagonism observed between them.

While our group could address the majority of questions that were at the forefront of our research, there still remain certain limitations to our findings or areas that could be further addressed. One of the most crucial constraints faced during fieldwork was time; with just six days on-field, we gathered as much primary data as we could from diverse samples to encapsulate various perspectives on the sericulture industry. To add on to the already existing paucity of time, the interviewing process was time-consuming and involved a lot of traveling around the town. There was a Karnataka Bandh during our time in Ramanagara which further served as a major obstacle to our mobility. Another major limitation we faced was limited access to information from the Central Silk Board (CSB) of Karnataka despite prior intimation. However, the information furnished to us by a sericulture scientist working at CSB proved to be very valuable to our research. We worked through our limitations by keeping our interviews brief by consciously making an attempt to only ask questions relevant to our research, engaging in purposive sampling on the basis of inputs from literature, relying on snowballing as a sampling method (referrals by those already interviewed) to save time and leveraging on our large numbers as a group (15 of us) by splitting up and taking several interviews simultaneously. Also, concerning the first sub-area of inquiry (relevance of the silk city title to Ramanagara), our limited sample size was a significant drawback. While we did interview reelers (among other workers on a grassroots level), we had a chance to interview a greater number of government

authorities and sericulture officials, who were bound to give a positive view on the industry. Secondly, concerning the role of social factors in employment, we faced ethical constraints which were a barrier to in-depth research. For instance, we could not directly ask interviewees regarding caste, and child labourers could not be interviewed. Thirdly, concerning the role of neoliberal forces in the industry, an area that can be explored further is whether the introduction of technology in sericulture, as well as government-induced policies, lean more towards privatization or government control. An additional question arising is whether the government will let neoliberal forces take over after overseeing a complete transition of reeling from the cottage to ARM-based industries.

Finally, a general area of further research may include the measures taken by the government or local authority in times of national emergency, when the cocoon market and individual sericulture units need to shut down completely. Specific areas of inquiry include the extent to which workers can sustain themselves in such cases, their reliance on daily wages and the role of government policies in such a case, and finally, the role of social factors (as mentioned in the second subquestion) on the impact of sericulture workers. This is particularly in reference to the current case of COVID-19 when India is in a state of complete lockdown and may apply to similar cases in the past as well.

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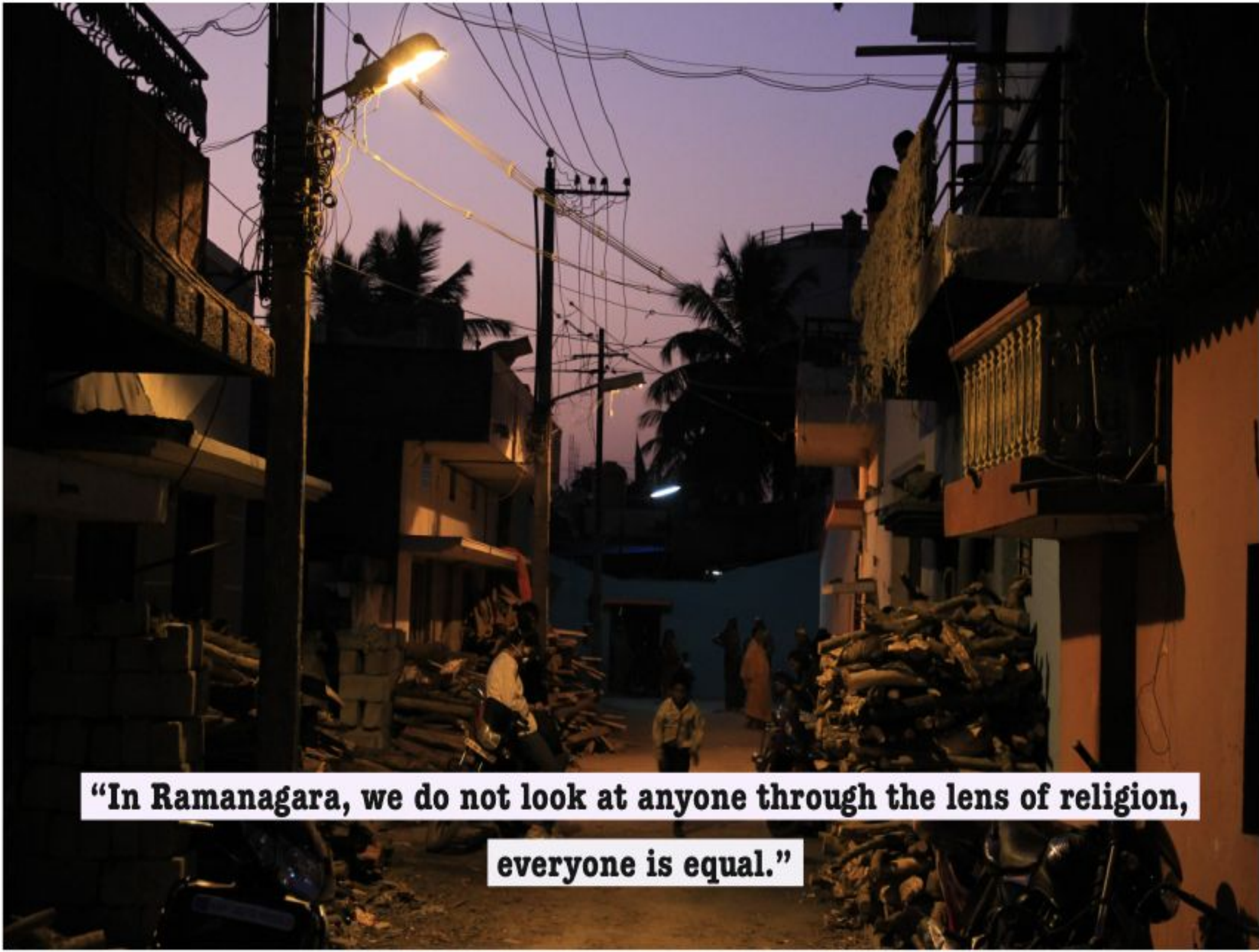
Glossary

Glossary (as provided by the Staff Appraisal Report- Indian National Sericulture Project, 1989):-

- **Acid treatment**: Treatment with hydrochloric acid of bivoltine silkworm eggs in order to break the (natural) hibernation period of the eggs.
- **Basin**: Part of the silk reeling machine (in front) in which cocoons float in warm water as the floss from the cocoons is reeled.
- **Bivoltine**: Race of silkworm from temperate regions which breed twice a year and whose eggs go through hibernation (dormancy) period.
- **Charka**: Simple, hand driven silk reeling machine with one basin and four to six ends.
- **Chawki**: Young silkworm up to the age of about 12 days after hatching. The word comes from the Karsada (Karnataka) language.
- **Chulla.** Stoves used in reeling establishments for boiling water.
- **Cocoon**: Capsule formed by silkworm larva by extruding thin floss (yarn) to protect itself during hibernation. The worm also metamorphoses as a pupa inside the cocoon.
- **Cold storage:** Facilities with separate chambers in which temperatures can be controlled and varied in order to replicate natural conditions in order to either preserve bivoltine eggs or to reduce the hibernation period.
- **Cottage basin:** Power-driven silk reeling machine with six to ten basins each with six ends.
- **Denier:** Grams per 9,000 meters of silk yarn - used as a measure of yarn thickness.
- **Dfl:** Disease Free Laying of silkworm eggs.
- **Fl, F2, F3 Farms:** Basic Breeder Seed Multiplication Farms
- **Ends:** Part of silk reeling machine where several filaments (from cocoons) are combined into silk yarn during the reeling process.
- **Eri:** A variety of silkworm (and silk).
- **Filature:** Large scale, modern reeling factory.
- **Germplasm:** Hereditary material of the germ cells (genes).

- **Grainage:** Establishment where silkworm eggs are produced through the mating of worms and multiplication process.
- **Laying:** Eggs laid by a mother moth.
- **Muga:** A variety of silk produced in the state of Assam, India.
- **Multivoltine:** Tropical silkworm races which breed throughout the year and whose eggs have no dormancy.
- **Mulberry**: A variety of plants belonging to Moru- alba species. Mulberry leaves are fed to silkworms until they form themselves into cocoons.
- **Multi-bivoltine**: A cross between bivoltine and multivoltine races.
- **P4/P31P2 Farms:** Farms in which the first stages of multiplication of eggs is done from 'parent seed'.
- **Parent seed**: Parent eggs of pure silkworm races from breeders stock.
- **Renditta:** Number of kilos of cocoons required to produce one kilo of silk yarn.
- **Tasar:** A variety of silk produced from wild silkworm races.


“In Ramanagara, we do not look at anyone through the lens of religion,
everyone is equal.”