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From Green Revolution to Industrial Dispersal  
Informality and flexibility in an industrial district for silk in rural South India

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This paper is about the nature and working of rural industrialisation in contemporary India. My aim is to explore the silk economy of Arni – a small-sized town in a rural district in Northern Tamil Nadu – that I take as a significant example of the industrial transformation in the Indian countryside after the introduction of the Green Revolution.

Arni provides a unique opportunity to explore rural industrialisation in India for two major reasons. First, being a market town in the 1960s, Arni has undergone a major socio-economic change in the post-Green Revolution period, becoming an industrial district for silk saris among the most important ones in Tamil Nadu. Second, the town and the surrounding rural district have been repeatedly surveyed since the Green Revolution, and a huge amount of qualitative and quantitative information and analysis is available that can be used for a thorough assessment of the industrialisation in the area.

I investigate social production relations in Arni's silk economy in order to point out the organisation of production and the factors that account for the integration and competitiveness in local and global markets. This exercise contributes to the analysis of the industrial economy of rural India, emphasising its basic traits and showing the differences between this

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\* My research on Arni would have never been possible without the field material collected in more than thirty years by Prof. Barbara Harriss-White from Oxford University. I thank Barbara for having generously allowed me to use her field data and notes from 1973 up to 1993-4, and also for several conversations on the town over the past ten years. It goes without saying that Barbara's research and published work on Arni represent the major reference for this paper.

The use in this paper of the evidence on Arni's silk economy collected by Camilla Roman from Oxford University and by K. Nagaraj from the Madras Institute of Development Studies is gratefully acknowledged.

form of industrialisation and urban/metropolitan industrial growth, with the final aim to assess the sustainability of Indian rural capitalism in terms of living and working conditions.

In this paper I argue that since the introduction of the High Yield Varieties (HYVs) Arni's silk economy has been progressively organised in a local production system that shares the basic features of the Marshallian industrial district. I also argue that Arni's silk district includes also the surrounding villages. Finally, I argue that Arni's silk district has a flexible and informal organisation, based on a strict hierarchy of workers according to their functions in the production process and to their personal features (caste and gender), and that competitiveness relies on low labour costs, ensuring the workers poor living and working standards.

The paper is organised as follows. Next section introduces the town and summarises its major trends of change in the post-Green Revolution period on the basis of the available information and analysis. Sections 3 and 4 focus on Arni's silk economy: while the first analyses its nature and working, the second explores labour organisation and social production relations. Finally, section 5 assesses the competitiveness of Arni's silk economy in local and global markets pointing to flexibility and informality as key factors.

## **2. A market town in a rural district in Tamil Nadu after the Green Revolution**

At the beginning of the 1970s, Arni had a population of about 39,000, was a minor administrative centre and an important market in North Arcot district (northern Tamil Nadu)<sup>1</sup>. It was a 'rural' town, i.e. a small town located in an economic environment in which agriculture was the dominant activity in terms of employment, but not necessarily in terms of income generation.

As a market town in a rural environment, Arni had a strong potential for rural (local) development and was playing a consolidated (and important) role as trade centre for the surrounding villages<sup>2</sup>. Yet, Arni was not only a market town for local consumption. Its economy also included a manufacturing sector – still at an initial stage of development – for

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<sup>1</sup> In 1991 North Arcot has been split in the Tiruvannamalai district and in the Ambdekar (now Vellore) district, and Arni has been included in the first.

<sup>2</sup> Arni's role as growth centre has been analysed in Harriss and Harriss (1984). See also Harriss (2003a and 2003b).

the production of hand-woven silk saris, and an increasing endowment of services (transport, repair and finance)<sup>3</sup>.

At the beginning of the 1970s, North Arcot district was chosen for a research on the problems of the Green Revolution in a semi-arid environment and eleven villages were randomly selected and surveyed. Arni was one of the high-order service centres in the area and was chosen for the study of the urban-rural economic relations in the context of agrarian change. Since then, the villages and the town have been surveyed again in 1982-84, to assess the impact of the HYVs on the local economy, and in 1993-94, to explore the prospects of economic liberalisation.

In each round, the data on the villages was generated by means of a stratified sample of households, on which detailed surveys were conducted on farm management, incomes, consumption and expenditures, while the data on Arni was generated by means of a random sample of firms (from a census of business premises) that were interviewed on their features, on inputs and output markets, and on geographical and economic linkages<sup>4</sup>.

Yet, the research on Arni has also continued beyond the three rounds. In 1993-94, as part of the major survey on the villages and the town, the development of silk handloom weaving in Arni and in the surrounding area was analysed with the aim to explain the increasing importance of the sector and to explore its internal organisation (Nagaraj *et al.*, 1996). Moreover, in 1997/8 I have conducted a field research on Arni's civil society and its impact on economic growth<sup>5</sup>, while in 2004 Camilla Roman from Oxford University has analysed the learning process in Arni's silk economy for her M.Phil. thesis. Finally, the unpublished paper by Socrates (2004) updates the information on Arni's silk economy in the post-liberalisation period<sup>6</sup>.

The available information provided by the three major surveys and by subsequent research is not only quantitative but also qualitative, and, taken together, composes 'an economic biography' of the town (Harriss-White, 2003a: p. 24) that can be employed – together with

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<sup>3</sup> A detailed analysis of Arni's economy in the first period of the Green Revolution is found in Harriss (1991).

<sup>4</sup> For details on the three surveys on the town, see Harriss-White and Harriss (2007); for details on the village surveys, see Harriss-White and Janakarajan, 2004.

<sup>5</sup> see Basile and Harriss-White (2003 and 2005).

<sup>6</sup> Other researches also exist on several aspects of Arni's economy and society. I only recall here the ones that I will use in the following sections. See Harriss-White (2003a) and Harriss-White and Harriss (2007) for details.

the data on long-term change in the villages – to explore the process of rural industrialisation in the area.

### *2.1. The growth of a differentiated and informal economy*

Since the 1970s Arni's economy has been growing at a very high rate. This growth is not fully reflected in the population that according to official information is of 60,815 at the end of the 1990s (Census of India 2001). Yet, as Harriss-White (2003a: p. 22) argues, this should be considered an underestimation due to the fact that the municipality gains in being small. A more realistic estimate, taking also into account the commuting workers from the villages and the migrant labour force, should be that of 100,000 people (*ibidem*).

The growth of Arni's economy emerges from the censuses of the town's businesses conducted for the three main surveys that show that the overall number of firms has trebled in the two decades and that the increase is observed for each group of activities (see tables 1 and 2). Yet, the town has registered over the whole period not only a marked increase in the number of businesses but also the emergence of new activities that take the place of the traditional ones. The outcome is a diversified business economy in which activities in production and trade, in agriculture and manufacturing, and in retail trade and wholesale trade, all co-exist.

**Table 1 – Arni Census: Private Firms (1973, 1983, 1993)**  
(No. of units)

BUSINESS	1973	1983	1993
01. Rice & Paddy	62	121	159
02. Agricultural products	96	139	254
03. Foods	439	564	1371
04. Farm Inputs	13	28	32
051. Silk products	62	243	1486
052. Other materials	130	195	297
06. General Merchants (Retailers)	20	37	76
07. Fuel & Energy Retailers	12	18	59
08. Transport Repairs and Services	82	136	194
09. Construction (included in Other materials)	-	-	-
10. Other Repairs & Services	191	321	623
11. Money and Financial Services	87	121	152
Total	1194	1923	4703

Notes

*Rice & Paddy* include rice mills and rice wholesale trade

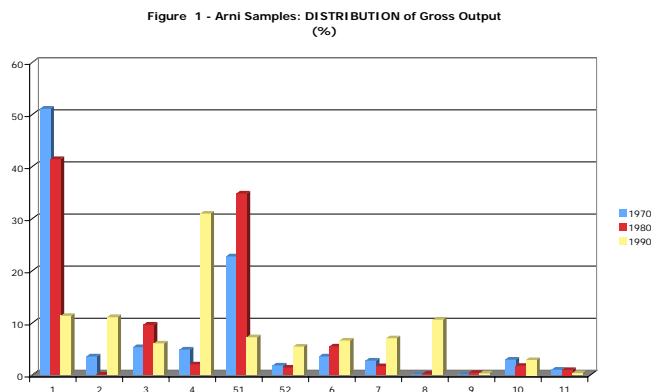
*Silk products* include silk factories and handloom weavers

*Other materials* include constructions, ready-made clothing, weaving machinery and pottery.

**Tab. 2 – Arni Census: Private Firms (1973, 1983, 1993)**  
(Rate of growth, %)

BUSINESS	1983	1993
01. Rice & Paddy	95.2	31.4
02. Agricultural products	44.8	82.7
03. Foods	28.5	143.1
04. Farm Inputs	115.4	14.3
051. Silk products	291.9	511.5
052. Other materials	50.0	52.3
06. General Merchants (Retailers)	85.0	105.4
07. Fuel & Energy Retailers	50.0	227.8
08. Transport Repairs and Services	65.9	42.6
09. Construction (included in Other materials)	-	-
10. Other Repairs & Services	68.1	94.1
11. Money and Financial Services	39.1	25.6
Total	61.1	144.6

Economic diversification is confirmed by the sample data on the distribution of gross output (figure 1) that shows an increasing trend over the decades. It is interesting to notice, though, that the main activities of the town in the 1970s and the 1980s – rice and silk – seem to have lost their dominant role in the 1990s.



Arni’s diversified economy presents the basic traits of informality. This is confirmed, on the one side, by the large number of unregistered micro- and small firms that employ family and casual labour (Harriss-White, 2003b: ch. 4; and Harriss-White, 2003a); and, on the other, by the prevalence in the town of a form of internal (non-state) regulation based on caste and family. While the main surveys emphasise the importance of family networks in Arni’s economy (Harriss-White, 2003: ch. 5), the survey on Arni’s civil society carried out at the end of the 1990s shows that the town is also regulated by a form of societal corporatism – in which the pressure for the corporatist order comes from social groups (and not by the state) – that relies on caste. Caste plays a two-fold role: caste ideology undermines class-consciousness and breaks the unity of the working class, while caste associations provide the institutional tools to organise civil society (Basile, 2008: ch. 11; Basile and Harriss-White, 2003 and 2005). Caste and family concur in providing the institutional framework for social interaction in the town.

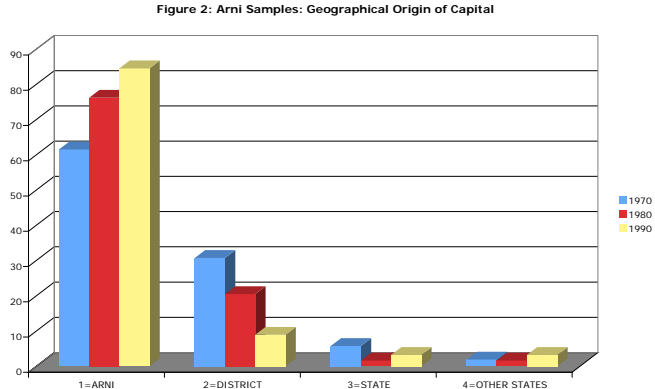
## 2.2. Arni’s local and global integration

Available evidence and analysis show that Arni’s economy is open, that its openness increases over the post-Green Revolution period, and that it has both a local and global dimension.

In relation to the integration on input markets, the sample data shows that Arni has progressively substituted local sources with external sources. While in the 1970s the villages provided the bulk of inputs, in particular for agricultural products and for construction materials, in the 1980s a sharp reduction is observed in the percentage of inputs coming both

from the villages and from the town itself, in favour of the increasing role of external sources, mainly in urban Tamil Nadu, and in particular in Madras (Chennai). This trend is observed also in the 1990s, when the villages only supply around 40% of the input for agricultural production, while Chennai supplies almost all inputs for general merchants and a high percentage for silk production. In relation to the destination of goods, the situation seems to be markedly different, as Arni has been increasingly re-enforcing its role as a market town. This is shown by the fact the in the 1990s the bulk of Arni’s production is sold in the town and in the surrounding villages, while other destinations receive only a negligible percentage of produced goods and services.

The increasing openness emerges also in relation to the origin of capital and labour that provide, though, a contrasting picture. In relation to the first, the main geographical origin of the capital invested in Arni in the 1990s is the town itself, while only a small percentage comes from the surrounding district and negligible is the contribution from Tamil Nadu and from other Indian states (figure 2).



By contrast, in the case of the origin of labour (figure 3), the sample data shows a clear reduction of the workforce coming from the town in favour of a sharp increase of the workers from the villages, while negligible is the contribution of migrant labourers<sup>7</sup>. It should be stressed that the contribution of village workforce has been increasing for silk products in particular (figure 4).

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<sup>7</sup> It must be emphasised that nothing can be said about casual labour for the lack of reliable data.

Figure 3 - Arni's Business Economy: Home location of Regular Workers

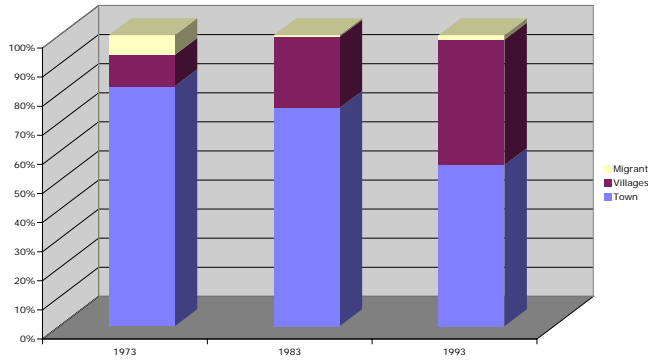
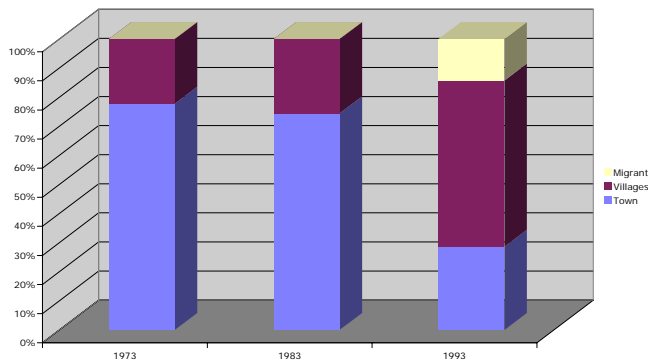


Figure 4 - Silk Products: Home Location of Regular Workers



The main conclusion can be drawn that the evidence confirms the role of Arni as a market town also in the post-Green Revolution period. Moreover, after the introduction of the HYVs the scope of the openness of the town appears to be much wider than in the pre-Green Revolution era, as Arni is linked to urban centres in Tamil Nadu and all over India. Finally, the progressive shift of the source of workers from the town to the villages shows the increasing capacity of the town to attract resources from the surrounding countryside.

### 2.3. Arni's economy and the Green Revolution

The empirical evidence suggests that in the 1990s Arni's economy is diversified, informal, and locally/globally integrated. While informality seems to be a permanent trait of the socio-economic organisation in the town – shown in particular by the dominance of self-employment and family firms and by the spreading of form of internal regulation based on institutions rooted in Indian history and culture, such as family and caste –, economic diversification and openness have been increasing over the years in the post-Green Revolution period. In the 1990s Arni continues to be a market town. Yet, it is both a market town – though mainly for wholesale trade and not for retail trade, as it was in the 1970s – and it is also a manufacturing centre specialised in the production of silk saris and in paddy milling.

Arni is an increasingly open economy. Economic openness is shown by the substitution – observed across different productions – of the sources of raw materials, from the villages and

nearby urban centres to new and competitive sources in Tamil Nadu, in other Indian states, and abroad. The link with the capital city of the state (Chennai) stands out as particularly important. It is also shown by the destination of goods: only a low percentage of Arni's traded and produced goods have the town as final destination. At the same time, the town is confirmed in its role of a growth centre in the local economy for its attraction of under-employed agricultural workers from the nearby villages that are increasingly employed in the economic activities of the town, and in particular in silk. As these trends together show, in the 1990s Arni's economy appears to be, at the same time, open to national and global markets and dependent on rural (local) resources and on rural (local) markets.

The evidence on Arni is consistent with the evidence on the villages. As Harriss-White, Janakarajan and Colatei (2004: p. 38-39) argue, a similar process of economic diversification has been going on extensively in the area, involving both agriculture and non-farm activities. The development of non-farm activities in the villages has been one of the major trends since the 1980s and has influenced employment structure and assets' distribution. While a part of non-farm workers is engaged in non-farm activities in the villages, another part provides the workforce for trade and manufacturing activities in Arni, as well as in other local towns (Jayaraj, 2004). Moreover, the progressive shift of retail shops for local (basic) consumption from Arni to the villages is observed, due to the rise of incomes following the introduction of the HYVs and the growth of non-farm activities (Jayaraj, 2004; Harriss-White, Janakarajan, Colatei, 2004).

Then, the long-term evidence on the town and on the villages shows that the introduction of HYVs in agriculture has induced a process of economic diversification in the local economy due to the emergence on manufacturing and service activities in Arni and of non-farm activities in the villages. Economic diversification has required local integration and openness: local integration has been necessary to ensure the supply of resources, while openness has been a condition for the disposal of the produced and traded goods and services. The Green Revolution has supported diversification by producing and liberating the resources – labour and capital – necessary for the growth of the differentiated economy and, at the same time, by creating – due to the increase in farm and non-farm incomes – the effective demand for Arni's new markets.

### **3. Arni's silk economy**

In the previous section I have summarised the evidence and analysis on Arni in the 1990s in very broad terms, stressing the rapid growth and structural change in the town and its renewed relations with the local and global economy. A preliminary conclusion that can be drawn from this review is that Arni's growth is the outcome of its capability to compete at local and global level. In this section I build on this conclusion exploring the factors that account for Arni's competitiveness and growth. For this exercise I focus on the silk sector.

Silk handloom weaving is an important industry in the Arni region. According to the census of businesses conducted for the Arni survey in 1993, 1,486 firms were involved in the production of hand-woven silk saris in the town, accounting for the largest number of firms in a single activity (table 3). This number includes weaving, twisting, and dyeing units, as well as silk co-operatives and the firms involved in the provision of inputs and in the sale of output. Moreover, to gain a perception of the size of the sector in the area, it should be added that the 1993 survey estimates that in the villages 14% of the male workforce and 7% of the female workforce are employed in silk handloom weaving (Jayaraj, 2004, tables 4 and 5)<sup>8</sup>.

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<sup>8</sup> It should also be added that the primary role of silk handloom production in the town and in its surrounding area is acknowledged by the Tamil Nadu Government that includes Arni among the Tamil Nadu clusters for silk handloom sari production (Government of Tamil Nadu, Handlooms, Handicrafts, Textiles and Khadi Department: Handlooms and Textiles. Policy note for the year 2007-08: p. 33).

Table 1 – Number of firms associated with silk sari production in Arni town (1993)

Type of unit	Number
Silk handloom (weaving) units	1141
Silk co-operatives	19
Twisting factories	83
Dyeing units	6
Units selling dye materials	3
Atchu pannai (1) makers	23
Pattu Izhaithal (2)	6
Units producing weaving tools	24
Silk merchants (both for yarn and saris)	159
Pawnbrokers who take yarn/zari as collateral	8
Powerlooms	1
Others	13
	1486

(1) The reed in the loom through which the warp passes.

(2) Units that join the border (of gold/silver yarn) to the body of the sari

Source: Nagaraj et al (1996: p. 15), elaborated from the 1993 Arni survey.

### 3.1. Two types of hand-woven silk saris in Arni

Arni town and its hinterland are specialised in the production of two main types of silk handloom saris that differ for their characteristics and for their production process. Nagaraj *et al* (1996) describe in details the differences among the types of saris and explain their implications in terms of production techniques and skill requirements (see also Camilla Roman, 2004, chapter 4, sections 1 and 2).

The saris produced in the Arni's area are: i) the *dhobi* sari – also known as traditional Arni sari – that is the simplest type, it has no design on the borders and on the *mundhani* (the final part of the sari to be worn over the shoulder) and has a uniform colour for the borders and the body; and ii) the *korvai* sari – also known as *Kancheepuram* sari, after the name of a nearby town renowned for the production of grand saris mainly employed for weddings – that is a complex sari, with solid and designed borders and *mundhani* (that are obtained by the use of a large quantity of *zari*<sup>9</sup>) and with contrasting colours in the borders and in the body.

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<sup>9</sup> That is the golden or silver thread that is employed for the production of saris.

As it has no designed borders and *mundhani* and has just one colour, the traditional Arni – *dhobi* – sari requires the use of a loom with a single shuttle that can be operated by a single weaver. By contrast, in the case of the *korvai* sari the borders are woven separately and then are joined to the body of the sari with separate shuttles<sup>10</sup>. All together three shuttles are needed and the loom needs to employ two workers, a ‘fully-fledged’ weaver and a helper (Roman, 2004: p. 50). In the first case, a fly-shuttle loom can be used, while in the second case a throw-shuttle loom with three shuttles is necessary. Moreover, in the case of the *korvai* sari, the production process usually require the use of *jacquards*, i.e. mechanical devices to make the complex designs on the borders and on the *mundhani*.

The differences in the production processes imply different skills. While for the weaving of Arni traditional saris the skills of a single worker who knows how to operate a fly-shuttle loom is necessary, the weaving of *korvai* saris requires the knowledge of the working of a throw-shuttle loom, the capability to coordinate the work of the helper and also the ability to use *jacquards*. In other words, the two production processes are different not only in terms of the number of workers, but also in terms of their skills.

It should be added that it is possible to reduce the difference in labour requirements in *korvai* sari production by introducing the so-called *thallu* machine, a mechanical device that would allow the weaving with only one worker. Yet, the *thallu* machine has shown to be difficult to operate and this difficulty adds to its cost, contributing to reduce the incentives to its introduction in *korvai* weaving in the Arni region (Nagaraj *et al.*, 1996: p. 23).

The quality of the *korvai* saris produced in Arni is not quite the same of the *korvai* saris produced in *Kancheepuram*, as the latter have more ‘grand’ designs, and more *zari* and raw silk are employed. Yet, they are currently marketed as *Kancheepuram* saris, occupying an intermediate segment of the market between low quality silk saris and the high quality genuine *Kancheepuram* saris.

The 1993 survey on Arni and the recent research on the region show that in the 1990s and in the early years of this century very few weavers are still producing traditional Arni saris, while the vast majority of them, both in the town and in the villages, have turned to *korvai* saris. The bulk of this change has been occurring in the aftermath of the Green Revolution and is linked to the socio-economic processes induced by the HYVs. An indirect support to

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<sup>10</sup> In this case, the sari can have up to three colours, one for the body and two more for the borders and *mundhani*.

this observation comes from the fact that, according to the data from the Handloom Census (quoted by Nagaraj *et al.*, 1996, table 6), till 1973 as much as the 80% of the handlooms in the Arni *taluk* were using fly-shuttle looms, and then were producing traditional Arni saris.

### 3.2. The silk handloom sector and the Green Revolution

Silk sari production is a relatively recent activity in the Arni region and its origin dates back to the last period of the British colonisation when less than 50 looms were working in the town, being operated by members of the traditional silk weaver castes<sup>11</sup>. After Independence, silk weaving slowly develops, involving an increasing number of weavers, and in 1956 the first silk handloom weaver co-operative society is created (Socrates, 2004). Yet, as the first Arni's survey shows, at the end of the 1960s only 62 silk firms are present in the town, while the large increase in silk weaving – and the shift from the traditional Arni saris to the *korvai* saris – will only occur in the 1970s and 1980s as part of the socio-economic change following the introduction of the HYVs in agriculture.

The impact of the Green Revolution on the increase of the number of weaving units and on the changes of products and techniques can be explained both from the production and the consumption side.

We have seen that the shift to *korvai* saris from the previous production of *dhobi* saris requires a major technical change that consists in the use of throw-shuttle looms instead of fly-shuttle looms. This is a change that increases the intensity of labour, as the latter employ only one worker, while the former employ two workers. This change is possible when two conditions occur: i) the labour force to employ in the new activity is available; and ii) available workers have the necessary skills to operate the looms and/or have the possibility to learn them. The introduction of the HYVs in local agriculture seems to have ensured, directly and indirectly, both conditions. Not only has the Green Revolution, with the 'modernisation' of agriculture, liberated a surplus labour force, it has also induced an increasing distress in marginal segments of the primary sector, obliging progressively the workers to search for other jobs in the non-farm sector, also at the costly price of long-time apprenticeship.

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<sup>11</sup> It should be noted that in the Arni region the number of individuals from the traditional silk weaving castes is rather limited and silk weaving is mainly done by cotton weaving castes and by other caste communities. As Nagaraj *et al.* (1996: p. 51) suggest, this is a specificity of the area, while in other silk centres of North Tamil Nadu, such as *Kancheepuram*, a percentage as high as 80% of weavers come from traditional silk weaver castes.

Then, in the Arni region the growth of silk weaving has been made possible by the shift from agriculture of the labour force. It should be stressed that this shift occurs in spite of social barriers – in particular caste barriers – revealing a remarkable social flexibility. A major consequence is that the bulk of the silk workforce in Arni does not come from the traditional silk weaver caste and only in a small part from cotton weaver castes.

From the consumption side, the increased demand of silk saris is currently imputed to the rise of farm incomes following the introduction of technical change in agriculture. In this sense, the increased demand for silk saris is taken to be a by-product of the Sanskritisation process and is due to the specific characteristics of silk: a good that assumes a particular significance in Hindu religion being considered to be purer than cotton. Nagaraj *et al.* (1996, section III) link the increased demand of silk saris to the emergence of middle classes, a widespread phenomenon in contemporary India that plays a major role in rural areas. According to these authors, the production of *korvai* saris in Arni meets the demand from the middle classes with an agrarian origin better than the more expensive *korvai* saris produced in *Kancheepuram*. In this sense, Arni's silk sari production appears to be entering a new niche in the silk handloom sari market that only emerges in the 1970s and 1980s.

### 3.3. *The formation of Arni's industrial district for silk*

I argue here that Arni's silk economy is not only a *cluster* of firms working in the same sector and in the same area. It is rather an industrial district – defined as a local concentration of firms embedded in a local community that are involved in interdependent production processes and have flexible use of labour in a delimited territory (Becattini, 2004) – and has its centre in the town itself. I point out below few major aspects of Arni's silk economy that support this argument.

The first aspect is the presence of a large number of small and medium size production units that form the whole *filière* for the production of silk handloom saris. As we see from table 1, in Arni town there are firms specialised in all phases of silk handloom weaving – from the sale of raw materials (yarn and *zari*), to twisting and dyeing, to the production of weaving tools and the sale of saris. This is a key aspect for the existence of an industrial district, as the local presence of the entire *filière* is a major source of external economies that can be internalised by the firms located in the area and involved in silk weaving. In turn, the external economies are the basis for the competitive advantages of area (i.e. of the firms located in the area) in local and global markets. Moreover, due to the existence of the local *filière* for silk production, the firms engage in a number of inter-relations that create a favourable

environment for joint actions to increase collective efficiency. While the local *filière* ensures that the bulk of economic relations are internal to the district, it does not imply that the district itself is a self-contained system, as it is shown by Arni's increasing openness<sup>12</sup>.

The second aspect is that the interdependence among firms in Arni's district has also a spatial dimension. The whole area has been following a common pattern of growth and change that has led to the differentiation of the economy in the town and in the villages. This process has impacted on the distribution of resources – in particular labour – among sectors and in the territory, increasing the interdependence among firms.

The emergence of new activities impacts on the structure of employment and on the spatial distribution of resources in the area: agricultural workers leave the sector to feed the growth of the silk economy in the town, while the increase of weaving units in the villages extracts labour force from agriculture to produce goods that are traded in the town. While both changes show that the growth of the town is constrained by the limited resources located within its boundaries, they also show that the silk economy can grow by employing the resources that gravitate in the nearby area. It follows that the growth of Arni's economy has been only in part due to the use of its own resources (i.e. resources located within its boundaries), while the town has been relying on resources that are external to it, but internal to its district. The dimension of the district is then defined by the economic and territorial space in which production relations take place: by the territory that ensures a suitable supply of resources – in particular of labour force – to be employed for its growth.

Another aspect that is important to consider in assessing Arni's industrial district refers to the nature of the relations between the town and the villages. The surveys on the area show that post-Green Revolution change has strengthened consumption and production linkages in the area, consolidating the hierarchical relations between Arni and the villages. The town has emerged the centre of the district, keeping within its boundaries the marketing of the output and maintaining under its control also the organisation of production. It extracts resources from the villages (that are the periphery of the local system), relying on them also for the reproduction of the labour force.

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<sup>12</sup> This is a typical situation for industrial districts. In this sense, Arni is similar to Prato in Tuscany (Italy), the industrial district for the production of wool fabric that has first drawn the attention of analysts for its performance in the Fordist crisis (Becattini, 1993).

Finally, another major support to the central role of the town comes from the timing of the formation of Arni's industrial district. The formation of the district has been a long lasting process that has involved first the town, and then the villages. Two broad phases may be delimited. In the first phase – that largely coincides with the 1970s and part of the 1980s – Arni has gone through a process of specialisation in silk sari production that has become the main activity in terms of employment and gross output. In this phase, the centralisation of production in the town has allowed the learning process and the spreading of techniques that have ensured the specialisation of the district as a whole. In this phase the construction of the market for Arni's silk also occurs, with the spreading of the Arni's *korvai* type of silk sari.

In the second phase – since the second half of the 1980s onwards – the production of handloom silk saris of the *korvai* type has been progressively decentralised to the villages, while Arni has retained within its boundaries the organisation of production and the marketing of the output for the industrial district as a whole. The decentralisation of sari production has been possible due to the differentiation of activities and employment that has changed the economic structure in the villages after the introduction of the HYVs. In this phase, the interdependence between the town and the villages has been enhanced by the reduction of production costs ensured by the lower cost of use of resources in the periphery – and in particular by the lower wages – while the industrial district as a whole has relied on the competitive advantages acquired in the first phase in local and global markets.

#### **4. Social production relations in Arni's silk economy**

I turn now to the analysis of the working of Arni's industrial district in terms of organisational and class structure. I describe first the organisational structure, and then I turn to class. I conclude the section by exploring caste/class interplay that appears to be of particular importance to understand the working of silk handloom weaving in India, i.e. an activity that belongs to the 'tradition' of the Indian countryside, in which the nexus caste/occupation is believed to be still very strong.

##### *4.1. Organisational structure*

Arni's industrial district for silk handloom saris is an informal economic system in which the entire typology of informal firms is contained, from individual and family firms to enterprises that employ a large number of dependent weavers under different informal contracts, both in the town and in the villages.

The whole district is based on a form of putting-out system that I describe below with the intent to point out the main social categories involved in the process (Nagaraj *et al.* 1996; Roman, 2004; Socrates, 2004).

As it occurs in informal systems (Bremas, 1999a and 1999b), 'intermediaries' dominate Arni's industrial district and control all the phases of the production process. In the Arni's case two major intermediaries are found, the master-weavers and the silk merchants that are locally called *maligais*. In principle, the two intermediaries have a different nature: master-weavers are directly involved in production, being a sort of silk entrepreneurs – with a variable scale of operation – and are usually weavers themselves, even if they might not be still weaving; by contrast, *maligais* are involved mainly in trade.

In practice, the two roles often overlap in the same person, and the overlapping increases with the informalisation process and the spreading of the putting-out system that progressively empty the manufacturer role of master-weavers and enlarge the role of *maligais* in production. In the basic situation, *maligais* and master-weavers buy weaving tools, raw silk and the *zari*, and supply them to the weavers, together with instructions on colours and designs<sup>13</sup>. The instructions on the colours and designs are up-dated on the basis of systematic explorations of the market carried out by the master-weavers and *maligais* themselves. Once woven, the saris are collected and sold.

Two basic types of master-weavers are found according to their scale of operation: i) small-scale master-weavers – located both in the town and in the village – that control a limited number of looms and that usually weave themselves; and ii) large scale master-weavers that control a large number of looms – up to 500 and 1000! (Nagaraj *et al.*, 1996: p. 96) – and that are located in the town. A major difference between the two types is that small-scale master-weavers, in order to operate on the market, require the intermediation of large-scale master-weavers and *maligais* in Arni, in other towns in Tamil Nadu, and in other states; by contrast, large-scale master-weavers do not need other intermediaries for their operations. It should be stressed that while there are cases of master-weavers operating in the villages, *maligais* work usually in the town, a fact that supports the central role of Arni in the industrial district.

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<sup>13</sup> It should also be emphasised the role of master-weavers/*maligais* as moneylenders, who anticipate the money to weavers in the course of the production process. This function accounts for the spreading of bonded labour in the sector (Roy, 1993: p. 7).

Several typologies of weavers are found. A first category is made of independent weavers who directly buy raw materials, are in charge of the pre-weaving operations and sell their saris to *maligais*. In the case of the Arni industrial district, only a small number of weavers are ‘independent’ in this sense, and they are mainly located in the town. The large majority of weavers are ‘dependent’ on *maligais* and master-weavers and can be located in the town and in the villages. Both independent and dependent weavers are production units often located in their household premises and employing household members as assistants. Both independent and dependent weavers own their looms. By contrast, there exists another important category of weavers – the wage weavers – that do not own their looms and work on looms owned by *maligais* or master-weavers.

Finally, the last category of weavers operating in Arni is the one of the weavers working in co-operative societies. As the 1993 Arni survey show, in Arni the number of silk weaving co-operatives is relatively low<sup>14</sup>. This is a trait that distinguishes Arni from other silk centres in Tamil Nadu – such as Kancheepuram (Remesh, 2001)<sup>15</sup>.

The organisation of production in Arni’s industrial district is then based on two main social categories: weavers and master-weavers/*maligais*. In spite of the internal differences in each category that might blur the boundaries, their role in silk weaving is markedly distinct. Independently of their appearance, the weavers are ‘dependent’ workers and are deprived of their entrepreneurial functions, even when entering social production relations as ‘independent’ agents. By contrast, the entrepreneurial activity is completely in the hands of master-weavers and *maligais* that control the production process in its entirety, ensuring at the same time the supply of raw materials and the marketing of the output, being their knowledge of input and output markets a major aspect of their contractual power.

Yet, to say that master-weavers and *maligais* are simply the ‘entrepreneurs’ of the Arni’s industrial system would be wrong in theoretical terms – as they are far away from the image of the entrepreneur of economics textbooks – and would understate their role in the district economy. The evidence shows that master-weavers and *maligais* are not specialised agents

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<sup>14</sup> According the Census of Handlooms (1987-88), the national average is that 20% of the overall full-time weavers in India work in the co-operative sector, 54% are ‘independent’ weavers and 15% ‘dependent’ weavers. The remaining 11% work in factories (Roy, 1993: p. 193-195).

<sup>15</sup> This situation appears to be an anomaly for a state like Tamil Nadu in which the co-operative silk handloom sector has been supported by the local government in several ways (TN Government, Policy Notes, 2006/7 and 2007/8).

that perform a single function. On the contrary, they manage silk's economy, moving from the organisation of production to the marketing of the output, also providing liquidity to the weavers. They organise the process of production according to the quality and quantity of resources, keeping into account their availability in the centre and in the periphery of the district, and the social constraints that might hinder their adaptation to the needs of the system. Master-weavers and *maligais* perform *multiple functions* and ensure, at the same time, that the resources of the district perform multiple functions. They are the agents that ensure that the district as a whole enjoys *economies of scope*, i.e. economies that derives from the flexible and multi-task use of resources.

The functions of master-weavers and *maligais* have shown to be crucial for the economic viability of Arni's silk economy in the medium and long period, as they have introduced new technologies and types of product, and have discovered new market outlets. In many sense, they are similar to the 'versatile integrators' that according to Becattini (2004) have made the success of industrial districts in the Third Italy, ensuring their survival to the Fordist crisis. As the 'versatile integrators' acting in Prato, master-weavers and *maligais* in the Arni's district explore the market and enhance the integration of Arni's silk economy in the local and global economy. They ensure that Arni's production structure adapts to market signals and changes, avoiding costly restructuring processes. They perform a 'plural' role that involves their category (their class, as we will see below) as a whole: to them it is due the 'invention' of the Arni *korvai* type of sari and the spreading of an organisational structure – a particular type of putting-out system – able to produce it in a flexible way.

To perform their role as 'versatile integrators', master-weavers and *maligais* need to have full control on the working class in order to prevent – and possibly to avoid – capital/labour conflicts and to enforce a flexible organisation of production. In the next section we explore the ways in which this task is pursued.

#### 4.2. *Two segmented classes*

Arni's industrial district contains two main groups of agents involved in silk weaving: on the one side, there are master-weavers and *maligais* and, on the other, there are weavers and helpers. These groups represent the antagonist classes of Arni's silk capitalism and are the main actors in Arni's class dialectics.

Master-weavers and *maligais* compose the rural capitalist class, while weavers and helpers compose the class of subaltern workers: two segmented classes that are made of groups of

individuals differing for origin and trajectory of class formation, but showing internally a basic social and economic homogeneity<sup>16</sup>.

As a class, rural capitalist are the outcome of two distinct trajectories of class formation. In broad terms, the *maligai* component derives from merchants and moneylenders that in the change induced by the introduction of the Green Revolution have started to differentiate their economic activity, investing merchant and usury capital in silk. By contrast, the master-weaver component is the outcome of social differentiation among the weaving castes, leading to the emergence of a number of individuals who have been able to start a process of capital accumulation, also thanks to the injection of income generated by the Green Revolution<sup>17</sup>.

In spite of their different origin and trajectory of class formation, the two segments give birth to a single class of agents that share interests, values, and lifestyles. Jointly, and often overlapping, they perform the function of ‘versatile integrators’ by which they perpetuate their economic control on Arni’s silk economy. At the same time, they pursue common political interests – also by means of corruption and tax evasion – sharing lifestyles in which conspicuous consumption and patriarchy dominate<sup>18</sup>.

More ambiguous appears to be the class status of small-scale master-weavers who still weave and have under them only a little number of looms. They are a sort of intermediate class of Arni’s silk economy, being different from the subaltern workers for their higher income, and from the capitalists for their interests and behaviour. Small-scale master-weavers’ position in social production relations depends on their ideological perception of their class interests and aspirations and on their linkages with the capitalist class<sup>19</sup>. If they accept – or are obliged to

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<sup>16</sup> I am using here the concept of ‘class segments’ – defined as parts of a class held together by common interests and specific conditions of production – as employed by Zeitlin and Earl Ratcliff (1988) in their stimulating analysis of the dominant coalition in mid-1960s Chile.

<sup>17</sup> Without using the concept of class segmentation, Roy (1993: p. 91 and followings) analyses the social stratification of the classes involved in the handloom-weaving sector in India. He imputes the historical origin of the segmentation of the rural capitalist class and of the subaltern weaving class in South India to the migrations of caste groups and to the involvement of peasant weavers.

<sup>18</sup> For evidence on social and family behaviour of the elites in Arni, see Harriss-White (2003b, in particular chapters 4 and 5).

<sup>19</sup> It should be noted that small-scale masters weavers are often involved in subaltern relations with large-scale master-weavers and *maligais* in terms of raw materials’ provision and for the marketing of the products. On this point, see Roy (1993, chapter 3) who analyses similar situations in other Indian states.

accept – interests and functions of *maligais* and large-scale master-weavers, then they should be considered part of the capitalist class, sharing the behaviour that is specific of this class, including the joint action as ‘versatile integrators’ to exercise a strict control on Arni’s silk economy. If they perceive their status to be similar to the workers, then they should be considered part of the subaltern class, together with weavers and helpers.

Also weavers and helpers have a different origin and different trajectories of class formation. As the evidence provided by Nagaraj *et al.* (1996) and Roman (2004) shows, only a small part of the weavers come from weaving castes, and they are mainly located in the town. The vast majority of weavers, both in Arni and in the villages, come from non-weaving castes and from other sectors, in particular from agriculture. The other major segment of the subaltern class is made of helpers and assistants: they are mainly women and children who are involved in silk weaving as unpaid family workforce or as bonded labour force (Human Rights Watch, 2003).

The social stratification of the class of subaltern workers in Arni’s silk economy is complex and highly hierarchical<sup>20</sup>. Several modes of inequality interact in defining the hierarchy – class, caste and gender – while individual statuses and improvements depend on personal and family features. The evidence seems to suggest a scarce permeability between the strata of weavers and helpers. As Roman shows (2004: p.), women very rarely become fully-fledged weavers but remain in the condition of helpers indefinitely, often even after marriage. A similar situation is observed also in the case of children that often work in conditions similar to slavery with very few hopes to improve their condition (Nagaraj *et al.*, 1996: p. 101).

Subaltern workers are subjected to a process of commoditisation that involves in different ways weavers and helpers. Several forms of commoditisation are found: from wage labour of dependent weavers and wage weavers and self-employment of independent weavers, to sub-contracted wage labour, child and women wage labour, and bonded labour of helpers and assistants. Workers enter the commoditisation process in a situation of subordination that is typical of the informal economy described by Breman (1996).

Within the putting-out system, independent weavers have the status of self-employed, even if in actual terms they lack of autonomy in decision-making both in relation to the type of saris they weave and the nature of inputs they use: in fact, they are dependent labour in disguise.

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<sup>20</sup> According to Roy (1993: p. 7), inequality among weavers has been always particularly strong in rural areas in South India due to the influx of migrant (low caste) workers with a low access to resources and markets.

By contrast, dependent weavers and helpers are by definition ‘dependent’ labour force; yet, they have no formal written contracts and no provisions for social security. All together, the ‘dependent’ labour force is paid on the basis of the number of woven saris produced per year – creating in this way a favourable environment to exploitation and self-exploitation – and their wages are usually a little above the poverty line, in the town as well as in the villages<sup>21</sup>.

It should be emphasised that usually weavers working in co-operative societies receive a higher wage in comparison to the wages paid in the private sector. Yet, as we have seen, in Arni there are only few co-operative societies, and then the prevailing wage is based on the level defined in the private sector.

By contrast, *maligais* and master-weavers flourish. Nagaraj *et al.* (1996: p. 100 footnote) estimate, on the basis of the survey data for 1993, that the largest master-weaver in Arni – controlling 1,000 looms – would have a minimum return on capital of 40% per year, after the payment of interests on circulating capital and the fixed costs<sup>22</sup>.

In the Arni’s system, upward mobility – from helper to master-weaver – is constrained by a number of major obstacles<sup>23</sup>. The evidence shows that to become fully-fledged weavers it is necessary to go through a long period of apprenticeship (Roman, 2004), and it is necessary to have the ‘right’ personal features in terms of gender and caste (Nagaraj *et al.* 1996). Once reached the stage of a fully-fledged weaver, an individual needs to buy the loom in order to

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<sup>21</sup> Nagaraj *et al.* (1996: p. 99) estimate in the mid-1990s that a monthly wage for a dependent weaver that owns the looms and has two children working outside the family as helpers is 300 Rs in Arni and 198 Rs, in the villages, with a differential that is little more than 30%. They also calculate that – due to the differential of cost of living – the wages in Arni and in the villages are about the same in terms of purchasing power, being both slightly above the poverty line. Monthly wages of weavers in Arni are a little below the average estimate of 300/400 Rs provided by the Census of Handlooms (1987-88). *Viceversa*, the estimate for the villages of 198 Rs is decidedly below the average wage and is explained by the widespread inequality in weavers’ wages in India. As Roy argues (1993: p. 191), the major divide in weavers’ wage is the urban/rural location: a weaver in a large and prosperous city might also earn up to 900 Rs that would place her/him among the elite of the working class in the informal economy. These estimates are confirmed also in the first years of this century, due to the crisis of the handloom sector that has kept the demands of trade unions low (Socrates, 2004).

<sup>22</sup> An analysis of the affluence and the power of the elites in the handloom sector is found in Roy, 1993, chapter 3).

<sup>23</sup> This is a major difference between Arni’s industrial district for silk and Prato’s district for wool fabric in Italy, where social mobility (both upward and downward) is taken as a physiological consequence of economic growth (Becattini, 2004).

become independent weaver. This is usually done with the money anticipated by the *maligai* or the master-weaver that is given back in a number of years during which the weaver lives on a very low wage. To buy another loom, starting then the rise to the status of master-weaver, implies other debts and then other costly re-payments of the debts.

These obstacles are very powerful in hindering social mobility and in keeping a large number of helpers and weavers in a condition of subordination in the long run. This explains why it has been possible in Arni to shift to *korvai* saris production: a production that requires the availability of low-cost, unskilled workforce – made mainly of unpaid family labour and of women and children – to assist the fully-fledged weavers. Yet, the availability of unpaid and bonded labour force also accounts for the lack of incentives to introduce the *thallu* machine that could reduce the labour intensity of the system. In other words, the availability of low-cost labour force and the rigidity of social structure are the main factors that explain the technological backwardness of the silk handloom sector in Arni.

Finally, it is necessary to stress that a similar class structure – with similar situations of supremacy and subordination – is found in the town and in the villages. With the intermediation of small-scale master-weavers, rural capitalists organise silk production in the villages, as well as the district as a whole, providing subaltern weavers with raw materials and designs, and collecting the final outcome.

#### 4.3. *Class and caste*

Social structure of Arni's silk economy is segmented not only along class lines but also along caste lines. Segmentation along caste lines in silk handloom weaving is a phenomenon that might appear difficult to explain as the sector involves a large number of weavers from 'traditional' weaving castes who have a strong 'sense of identity' of their status (De Neve, 2004: p. 51 and followings). Moreover, to this it should be added that the 'sense of identity' of weavers is even stronger in the case of silk weaving for the 'purity' of silk (in comparison to cotton and other weaving materials) that places silk weavers at the top of a hierarchy of handloom weavers.

Yet, the presence of non-weaving castes in weaving is a rather common situation in India, in particular in the South. De Neve (2004), in his research on the informal textile sector in two towns in central Tamil Nadu, finds out and explores the interaction among caste communities in weaving, while Roy (1993, chapter 3) shows that the presence of several castes has been widespread in South India since the 1930s, being the joint outcome of the migrations of caste

communities and of the progressive involvement in weaving of agricultural castes, in particular in rural areas.

According to a survey conducted by the Census of India (quoted by Nagaraj *et al.*, 1996, p. 48), in 1961 80% of the weavers in Tamil Nadu belonged to the main weaving castes, and in particular to: Devangas (including the sub-caste of the Seniers), Sengunda Mudaliars, Saliars and Saurastras<sup>24</sup>. Since 1961 the situation has deeply changed and now the penetration of non-traditional weaving castes is widespread, both for cotton and silk. It is a remarkable exception Kancheepuram, in which the majority of weavers still come from traditional weaving castes specialised in silk (Remesh, 2001<sup>25</sup>).

A similar situation is found in Arni, in which small communities of traditional weavers exist, some of them with a recent specialisation in silk. According to the evidence provided by Camilla Roman (2004: p. 54), traditional silk weaving communities in contemporary Arni include Segunda Mudaliars, Veera Saiva Chettiars, and Devanga Chettiars (a caste group that has started specialising in silk only 40 years ago). They are involved in Arni's silk economy together with non-traditional weaving communities, such as Gounder and Udayar (Roman, 2004: p. 55) in the town and Agamudia Mudaliar, Vanniars and Yadavas in the villages (Nagaraj *et al.*, 1996, p. 56).

While in principle the difference between weaving and non-weaving castes are important to assess caste stratifications in Arni's silk economy and should not be neglected, this divide is not by all means the single one nor the most important one. Other caste distinctions among the weavers exist that are important to explore class/caste nexus.

Caste segmentations work in the learning process and upward mobility. The evidence provided by Roman (2004, section 4.3) explains us how the learning process in Arni's silk economy works. We learn that the knowledge about silk weaving is acquired by means of a learning process in which caste barriers are low, and to which in principle also non-traditional weaving castes have access. Yet, it would be wrong to say that caste is irrelevant on the way in which the learning process is organised. On the contrary, it appears that 'caste connections' (ibidem: p. 57) are the key to learning opportunities.

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<sup>24</sup> They were involved mainly in cotton weaving (with over 75% of the weavers). By contrast, silk weaving was a residual sector. The only exception was the Saurastras community who was specialised in silk (with about ¼ of the caste group engaged in silk weaving).

<sup>25</sup> See also Nagaraj *et al.* (1996, p. 49-40) for an assessment of the differences between Arni and Kancheepuram.

In Arni there are no schools to learn how to weave, and to start the profession it is necessary to go through a long period of apprenticeship in which the apprentice works with a fully-fledged weaver. In some cases – as for the *korvai* saris – the apprentice might be progressively involved in production as an assistant, and for the weaver might be convenient to have an apprentice, as an helper is necessary to operate the throw-shuttle loom. In other cases a helper is not needed and to have an apprentice is very costly to the weaver in terms of time, as weaver and apprentice cannot work simultaneously on the loom. Yet, in both cases, the learning process for silk handloom weaving is long and costly, and requires the explicit engagement of the weaver.

In case of traditional weaving castes, children start learning from their parents. *Viceversa*, in the case of non-traditional weaving castes it is necessary to find a way to enter into the sector. Roman shows that caste-based and neighbourhood-based relations supply the key to enter *korvai* weaving as they are create the trust relation that is necessary to be accepted as an apprentice and to start the learning process. The lack of caste-based and neighbourhood-based relations – and then of trust – explains why the SCs members are virtually absent in the weaving profession, and why it is not infrequent to find a clustering of individuals from the same caste in different areas of the town and in the villages.

The other important perspective on the influence of caste on social stratifications in Arni's silk economy is provided by upward mobility. I focus here on three main moments in which caste influences upward mobility in silk weaving. The first is the mobility from assistant to fully-fledged weaver. This mobility is not always ensured but depends on the features of the assistant, and only people with the 'right' personal features (in terms of caste and trust) can move to the status of fully-fledged weavers. For instance, SCs people are systematically excluded even in the cases in which they are accepted as assistants.

Also upward mobility from weavers to master-weaver is to large extent conditioned by caste. There is evidence (Nagaraj et al., 2006: p. 58) that in Arni master-weavers are mainly from the traditional weaving castes. This is due to the fact that individuals from traditional weaving castes only keep the patrimony of knowledge about the whole production and marketing process for saris that is required to be a successful master-weaver. Then, the larger proportion of individuals from weaving castes among master-weavers than among weavers is justified with reasons that explicitly refer to caste, neglecting other possible explanations in terms of personal skills.

Finally, caste origin does influence upward mobility in the case of *maligais*. Here, the situation seems to be the opposite to the one of master-weavers, as weaving castes are not represented among *maligais*. This situation is easily explained if one takes into account the trajectory of formation of this segment of the capitalist class that usually starts from usury and trade, and not from weaving. Yet, also this case, as the case of master-weavers, shows that the capitalist class is less caste-differentiated than the class of the subaltern workers.

The evidence on Arni – as well as on other cases (De Neve, 2004) – shows that the link between caste and occupation in the silk sector in contemporary India is weak. This is shown by the presence of several dominant castes in an activity that was traditionally in the hand of a small number of weaving castes. Yet, castes still matter in Arni and, as Roy (1993: p. 85) finds out for South India, also in Arni there is a strong intercaste mobility in the case of wage labour, while caste mobility is much lower in the capitalist class.

I argue that, in the case of Arni's silk economy, caste appears to be a 'regulative' factor of social production relations and it performs its regulatory function interacting with class. Caste affiliations influence the access to the weaving profession and upward mobility within the sector. In so doing, they form new segmentations within the two broad classes of capitalists and subaltern workers, creating new non-class hierarchies within each segment. Caste segmentations increase the non-permeability of Arni's social structure, hindering the mobility from one segment to another one. In the case of the capitalist class, the double segmentation increases social differentiation, creating and re-enforcing power relations between social groups. In the case of subaltern workers, the double segmentation increases the differences inside the class, introducing non-class elements of separation.

## **5. On the competitiveness of Arni's silk economy**

Arni's silk district is a successful case of rural industrialisation in post-Green Revolution Tamil Nadu and Arni's silk economy has shown to be able to overcome the crisis of the silk handloom sector of the 1990s, while other silk centres in the area failed to do – as for instance Kancheepuram (Remesh, 2001). In this section I will present a tentative interpretation of the reasons for this outcome.

It seems to me that the growth of Arni's silk economy has at the same time an economic and a spatial dimension, and should be explained, at the same time, in economic and spatial terms. The evidence shows that the post-Green Revolution restructuring has involved Arni and the villages, inducing a similar process of economic differentiation, with the main consequence to

transform the town into a major manufacturing centre, and to generate manufacturing and service activities in the villages. Focusing on silk, we have seen that this process has led to the formation of an industrial district for the production of silk handloom saris, and that the district has a centre – Arni – and a periphery – the villages. We have also seen that the relations between Arni and the villages are of interdependence: sari production has been progressively decentralised to the villages, while Arni retains the control of the district's economy concentrating the organisational and marketing functions.

I believe that to explain the performance of Arni's silk economy one should look for the reasons for its growth and resilience in the relations between the town and the villages within the industrial district.

As Nagaraj *et al.* (1996) argue, the putting-out system is the main source of flexibility and resilience for Arni's silk economy. Yet, the growth of Arni's silk economy depends on the spatial reach of the putting-out system, on the social structure on which the system impacts, and on the agents that operate it. *Per se*, the putting-out system is a flexible organisation of production that is typical of the informal economy. No formal enterprises exist and production is dispersed among a large number of production units with low contractual power. Moreover, its flexibility is increased when it is applied to a social structure – like the one prevailing in Arni's silk economy – in which production is based on self-employment and small-scale family-based units, and caste barriers are low.

Yet, flexibility is also increased by the geographical dispersal of production to agricultural areas at lower level of growth. In this case, growth differentials become an incentive for the decentralisation of economic activities, while, in turn, decentralisation increases profits and employment and the cost for the reproduction of the silk sector is supported by agriculture. This is what has been occurring in the case of Arni's industrial district for silk, in which the main source of growth of the district as a whole is to be found in the capability to involve progressively peripheral areas within the economy centred around the town.

Master-weavers and *maligais* are the main agents of this process and the growth of Arni's silk economy is largely due to their capability to understand market signals and to explore new organisational forms in production and in marketing. They are the 'versatile integrators' of Arni's industrial district for silk saris: capitalists who play a multi-task function for the organisation of production and for the marketing of the output. Being in control of the organisational aspects of the silk economy, they enhance the decentralisation of production to the villages, overcoming caste and spatial barriers, and, being in charge of the supply of raw

materials and of the disposal of the outcome, they ensure the local and global integration of Arni's silk economy.

Yet, the effectiveness of master-weavers and *maligais* in enhancing Arni's silk economy only provides a partial explanation of the growth of the town in the post-Green Revolution period. To complete the explanation, we need to assess the process also from the perspective of labour.

Arni's putting-out system is highly exploitative of the workers, due to informal organisation and decentralisation of production. Arni's silk economy shares the main features of the informal economy. Production is organised in micro and small firms that employ unpaid family workforce with a high level of exploitation (in particular of women and children). The techniques for *korvai* weaving re-enforce the exploitation of the weakest strata of the workforce that are employed as helpers without access to upward mobility, while at the same time, the availability of unpaid family workforce reduces the incentives to the introduction of technical change that might reduce labour-intensity in silk weaving. Finally, the decentralisation of sari production to the villages increases the level of exploitation, due to the wage differentials between the town and the peripheral areas. As a result, subaltern workers, both in Arni and in the villages, live on a wage that is around the poverty line or slightly above (in the case of fully-fledged independent weavers).

Social structure is double-segmented along caste and class lines. Master-weavers and *maligais* are the main segments of the capitalist class and keep the control of silk economy firmly in their hands. The working class is highly segmented: caste segmentations add to class segmentations, creating a mosaic of subaltern social groups in poor living and working conditions.

Caste provides a form of internal regulation of Arni's silk economy in which caste segmentation is employed according to the needs of the dominant classes. While the link between caste and occupation is weak, caste barriers do exist, and are strong for the capitalist class and less strong for waged workers. Castes hinder upward mobility, perpetuating the presence of the dominating caste groups among master-weavers and *maligais*. At the same time, caste barriers become weaker when the involvement of lower castes is necessary for economic growth and when it does not challenge power relations within the economy, as it occurs in the case of participation of weavers from non-traditional weaving castes in the villages.

The key to growth and resilience of Arni's silk district is then not only in the way in which the economy is organised by master-weavers and *maligais*, but also – and primarily – in caste and class segmentations that make it possible the exploitation and subordination of the working class, re-enforcing power relations rooted in Indian culture and institutions.

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