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Chapter 9

A Luxury Industry: The Production of Italian Silks 1400–1600

Luca Molà

For over two millennia, silk was one of the most important commodities in the world economy. As early as the first century BC, in the form of trade goods, gifts or homage, precious silk fabrics were sent from the Chinese Empire to Rome and throughout a good part of Asia. Used for a considerable length of time in calligraphy, painting and the rituals of Buddhism, monks, pilgrims and merchants would take silk with them on their travels across Central Asia. From the eighth century onwards, the regions that had converted to Islam began to use it to produce and make fabrics, and these production techniques were soon transferred to Muslim Spain. Meanwhile, from the sixth century onwards, the Byzantine Empire had also acquired the tools necessary for the production of silk fabrics, of which extremely refined samples dyed with purple and reserved for the Imperial court were produced in the state workshops of Constantinople, or manufactured by independent artisans and entrepreneurs in Thebes and Corinth for a much vaster market. Between the Late Middle Ages and the early modern period, every year endless caravans would carry tonnes of silk from Persia to the Ottoman Empire and the regions ruled by the Mamluks, and an even greater quantity would travel to the south-east, towards India, a trade that under the Safavid dynasty was controlled by Armenian businessmen. With the arrival of European ships in East Asia in the sixteenth century, the Portuguese began to supply Japan with Chinese silk via the trade-posts of Macao and Nagasaki, while by the end of the century the silver from the American mines of Potosi and Zacatecas was being transported by the Spanish to their new colonies in the Philippines where it was then traded for the fabrics that had been brought there by a populous colony of Chinese merchants. Once a year the King of Spain sent a galleon from Manila to sail the Pacific and transport Chinese silk to the Peruvian and Mexican markets where, however, the silk industry had already developed thanks to the emigration of Spanish experts in Mexico City and Puebla de los Angeles.

However, in the seventeenth and eighteenth centuries it was the great East India Companies of Holland, England and France that were in charge of the distribution of silk from Asia in Europe, and they even participated in the flourishing silk market of Bengal. Silk can therefore rightly claim to have been one of the principle goods in the history of the early development of economic globalisation.¹

Italy played a key role in these long and fascinating histories. Starting its development in the city of Lucca from the twelfth century onwards, probably thanks to Jewish or Greek craftsmen, the silk industry soon spread to Venice, and during the early modern period it took roots in both towns and cities throughout the peninsula. From the thirteenth to the seventeenth century the silk fabrics and thread produced by the Italian industries completely dominated the European markets, supplying both the elite and the middle classes all over the continent, from Portugal to the Grand Duchy of Moscow, with myriad diverse fabrics that were used for clothing, furnishings and religious functions. Furthermore, from the fifteenth century onwards, the industries in Italian cities began to export their products to the Middle East, thus overturning a long-standing technical supremacy. The knowledge and capital accumulated by Italian merchants and businessmen were undoubtedly at the basis of this success, as they knew how

¹ Unfortunately, in the field of *global history* there has not yet been a detailed study on silk covering the entire period. For some general overviews or studies on individual areas see: Liu Xinru, 'Silks and Religions in Eurasia, c. A.D. 600–1200', *Journal of World History* 6 (1995): 25–48; Thomas Ertl, 'Silkworms, Capital, and Merchant Ships: European Silk Industry in the Medieval World Economy', *The Medieval History Journal* 9 (2006): 243–270; Shelagh Vainker, *Chinese Silk. A Cultural History* (New Brunswick: Rutgers University Press, 2004); Robert S. Lopez, 'Silk Industry in the Byzantine Empire', *Speculum*, 20 (1945): 1–42; David Jacoby, 'Silk Economics and Cross-Cultural Artistic Interaction: Byzantium, the Muslim World, and Christian West', *Dumbarton Oaks Papers* 58 (2004): 197–240; Linda K. Steinmann, 'Shah 'Abbas and the Royal Silk Trade 1599–1629', *Bulletin of the British Society for Middle Eastern Studies* 14 (1987): 68–74; Rudolph P. Matthee, *The Politics of Trade in Safavid Iran. Silk for Silver 1600–1730* (Cambridge: Cambridge University Press, 1999); Willem Floor e Patrick Clawson, 'Safavid's Iran Search for Silver and Gold', *International Journal of Middle East Studies* 32 (2000): 345–368; Ronald W. Ferrier, 'The Armenians and the East India Company in the Seventeenth and Early Eighteenth Century', *The Economic History Review* 26 (1973): 38–62; Michael Cooper, 'The Mechanics of the Macao–Nagasaki Silk Trade', *Monumenta Nipponica* 27 (1972): 423–433; Woodrow Borah, *Silk Raising in Colonial Mexico* (Berkeley: University of California Press, 1943); Sushil Chaudhury, 'International Trade in Bengal Silk and the Comparative Role of Asians and Europeans, ca. 1700–1757', *Modern Asian Studies* 29 (1995): 373–386.

to mobilise their commercial networks to start an industry that focused on the employment of a highly specialised human capital. With few exceptions, it was these very entrepreneurs who established the new industrial enterprise in Italian urban centres in the early modern period, with the active support of the governments of the various states.²

During the fourteenth century, Venice, Bologna, Florence and Genoa received considerable support from numerous families of artisans and merchants from Lucca who had fled their homeland following the political upheavals that started in 1314 and continued until well into the middle of the century, in a movement that continued spontaneously for decades, although they were encouraged in various ways by the cities that welcomed them.³ In the fifteenth century, however, it was the direct agreements between city authorities and individual operators that prevailed, and the latter took it upon themselves to start the production of silk fabrics in exchange for commercial and fiscal advantages. The names of some ‘founders’ of the industry who introduced the production in new cities at a precise date have therefore gone down in history: Nello di Franceso in Siena in 1438, the Florentine Pietro di Bartolo in Milan in 1442, Bartolomeo Gregori in Perugia in 1459, the Genoese Urbano Trinchero in Ferrara in 1462, and the Florentine Francesco di Nerone in Naples in 1474. In some cases the businessmen in charge of these projects for industrial development were contacted and persuaded to accept the post from government boards that had been appointed for the very purpose of enriching their city with silk production, thus following an economic policy that was increasingly widespread in Italy as the advantages the silk industry offered became clearer and clearer. A fundamental aspect of this policy was the support of wealthy financiers, belonging both to the local ruling class and the international merchant and banking elites, who promised to cover the costs of starting up the business, which was no small sum. According to the calculation a Venetian expert presented the King of Naples in 1465, at least

² See: Bruno Dini, ‘L’industria serica in Italia. Secc. XIII–XV’, in *La seta in Europa, secc. XIII–XX*, ed. by Simonetta Cavaciocchi (Florence 1993), 91–123; Luca Molà, Reinhold C. Mueller and C. Zanier, ed., *Dal baco al drappo. La seta in Italia dal Medioevo al Seicento* (Venice: Fondazione Giorgio Cini, 2000).

³ Luca Molà, *La comunità dei lucchesi a Venezia. Immigrazione e industria della seta nel tardo Medioevo* (Venice: Istituto veneto di scienze, 1994), 21–72.

10,000 ducats were needed if a gold-silk fabric production was to be started successfully, and this figure is not at all surprising if one considers the cost of the raw materials, silk in particular, but also valuable dyes and spun gold and silver. In addition, further money was made available by the local governments or princes to finance the initial development of the business: 100 florins a year for eight years were promised in Siena, 70 florins a month for ten years were stipulated in Milan, and an annual sum of 300 ducats for ten years was agreed upon in Naples. This also included a general reduction in excise tax and the total fiscal exemption for the trade of the materials needed for production.⁴

We must bear in mind that alongside this intense activity regarding the preparation at an institutional and financial level, there was also another aspect that was just as arduous, which was finding the workmen and equipment to be moved, at times over long or middle distances. In cities where the silk industry was already flourishing, skilled craftsmen were hired (especially weavers) by promising them generous rewards and greater independence from corporative controls, that were originally inexistent in the new locations. In turn, since they had an intimate knowledge of local manpower in this field, these craftsmen would promise to find the workers – men and women – they needed in their workshops and take them with them, as well as purchasing or commissioning the manufacture of the equipment they needed. All of this was done with the utmost secrecy and involved a certain element of risk, since from the fifteenth century onwards, aware of increasing international competition, silk cities had forbidden the emigration of their human and technological capital, comparing it to industrial espionage. For example, Genoa and Florence went as far as promising

⁴ Luciano Banchi, *L'Arte della seta in Siena nei secoli XV e XVI. Statuti e documenti* (Siena: Tipografia sordo-muti di L. Lazzeri, 1881), appendix, docs. I–II; Paolo Grillo, 'Le origini della manifattura serica in Milano (1400–1450)', *Studi Storici* 35 (1994): 903–906; Rita Staccini, *Le arti perugine della bambagia e della seta* (Spoleto: Centro italiano di studi sull'alto medioevo, 1994), 19–20; Luigi Napoleone Cittadella, *Notizie relative a Ferrara per la maggior parte inedite*, (Ferrara, 1864), 502–503; Raffaele Pescione, 'Gli statuti dell'Arte della seta in Napoli in rapporto al privilegio di giurisdizione', *Archivio Storico per le Province Napoletane* 5 (1919): 160–166; Pescione, *Il tribunale dell'Arte della Seta in Napoli (da documenti inediti)* (Naples, 1923): 95–105; Luca Molà, 'Oltre i confini della città: gli artigiani e gli imprenditori della seta fiorentini all'estero', in *Arti fiorentine. La grande storia dell'artigianato. Vol. II: il Quattrocento*, ed. F. Franceschi et al. (Florence: Giunti, 1999), 93–98.

impunity to anyone who killed a silk craftsman who had moved and was working for a competitor in the field. It is therefore not at all surprising that the emigrates asked to be granted the privilege of bearing arms when they were drawing up a contract with the public authorities, making specific mention of the danger they were exposing themselves to by moving to a new location.⁵

The proliferation of silk workshops throughout Italy had to meet a demand for silk fabrics that had increased with remarkable speed from the fourteenth century onwards. While during the Early and High Middle Ages it had been almost exclusively the nobility and high-ranking clergyman who had been able to afford silk fabrics from Asia and the Byzantine Empire, from the fourteenth century onwards it was the Italian and European urban elite who began demanding silk products of the highest quality and variety, as a result of their growing wealth. As the introduction to this volume demonstrated, a frenetic increase in consumption became a source of worry to moralists, men of the church and public authorities who, although they supported the silk industry, also wanted to stop its products from spreading among the local population, in an attempt to save their citizens' patrimony from being squandered on luxury goods. This resulted in an increase in sumptuary laws in both Italy and throughout Europe, which reached its peak in the sixteenth and seventeenth centuries, when the consumption of luxury goods seemed to have spiralled out of control. Venice alone issued 100 orders in the attempt to hit particular fashions, fabrics and dyes, or with the intention of regulating the entire system of clothing in the city. However, all these attempts met with little success and proved impotent in the face of this 'hunger' for silk that became a fundamental characteristic of the mentality of individuals and families during the Later Middle Ages and early modern period.⁶

Commerce and Production of Silk

⁵ Luca Molà, *The Silk Industry of Renaissance Venice* (Baltimore–London: John Hopkins University Press, 2000), 29–51.

⁶ For more on Italian sumptuary laws see: Maria G. Muzzarelli, *Gli inganni delle apparenze. Disciplina di vesti e ornamenti alla fine del Medioevo* (Turin: Scriptorium, 1996); Maria G. Muzzarelli, *Guardaroba medievale. Vesti e società dal XIII al XVI secolo* (Bologna: Il Mulino, 1999); Maria G. Muzzarelli, ed., *Disciplinare il lusso: la legislazione suntuaria in Italia e in Europa tra Medioevo ed età moderna* (Rome: Carocci 2003).

The raw silk used in Italian industries was of various origins. The variety in the areas of supply depended partly on the intrinsic characteristics of the raw material, which was different according to the race of the silkworms it was produced from, their diet, how they were bred and, in particular, the quality of cocoon reeling in their place of origin. Another factor was the need to make sure they were not dependent on just one commercial trade channel, since it might be subject to frequent, short-term fluctuations. During the thirteenth century and until the 1320s, the industry in Lucca used considerable shipments of Chinese silk, brought to Tuscany via the port of Genoa and its merchants. However, it is difficult to know whether this *cattua* silk – which came from Cathay, the name of the Chinese Empire at that time – that can often be found in the notarial registers from the second half of the thirteenth century onwards, was purchased directly on the markets of the Far East by the Italian businessmen who traded there thanks to the establishment of the *pax mongolica* (Mongol Peace), or whether it was brought to Italy via Tabriz, Urgenc, the ports of the Black Sea and the Middle East, where it had been taken by Mongol and Arabian merchants. Contrary to what one might believe, it was not of the highest quality. Raw materials of different origins cost more, perhaps because during the long journey involving all kinds of transport across the roads of Central Asia – going from one region to another it was loaded on horses, river boats, donkeys, camels and oxen-pulled carts – the packaging would be ruined and by the time the Chinese silk had reached its destination it was frayed, that is, worn (at least this is the warning Francesco Pegolotti gives purchasers in his famous *Pratica di mercatura*). At any rate, with the collapse of the Yuan dynasty and the advent of the Ming, contacts between China and Europe were interrupted for centuries and, as a consequence, Chinese silk disappears from the Italian documentation.⁷

⁷ Robert S. Lopez, 'Nuove luci sugli italiani in Estremo Oriente prima di Colombo', in, *Su e giù per la storia di Genova*, ed. Robert S. Lopez. (Genoa: Università di Genova, 1975), 95–104; Robert-Henri Bautier, 'Les relations économiques des occidentaux avec les pays d'Orient, au Moyen Age. Points de vue et documents', in *Société et compagnies de commerce en Orient et dans l'Océan Indien. Actes du Huitième Colloque International d'Histoire Maritime (Beyrouth 5–10 Septembre 1966)*, ed. M. Mollat, (Paris 1970), 288–292; Ignazio Del Punta, 'Lucca e il commercio della seta nel Duecento', in *Per Marco Tangheroni. Studi su Pisa e sul Mediterraneo medievale offerti dai suoi ultimi allievi*, ed. Cecilia Iannella (Pisa: Edizioni ETS, 2005), 111–115.

From the thirteenth century, the most commonly used silk came from Persia, especially from the areas around the Caspian Sea, and had a variety of names, depending on the region in which it was produced. The most sought-after qualities were the *leggi*, *talani* and *stravai*, but the *gangia*, *ghella*, *ardassa*, *canari*, *mamodea* and *tracazi* were also frequently mentioned.⁸ From the fourteenth century onwards, alongside the Persian threads those from the Iberian peninsula are mentioned more and more frequently, in particular those from Southern Spain.⁹ It is instead Venetian sources that provide most information about silk from the Balkans, mainland Greece (the *coronella* and *fior di morea* silks were particularly valuable) and the Greek islands, from Syria and Palestine.¹⁰ Each kind of silk reached the Italian industries in a different form and thus required a certain amount of experience on the part of the merchants, since they had to be able to identify it and assess its quality. A *Treatise* on silk manufacturing written in Florence during the second half of the fifteenth century lists a great number of them, including the characteristics of the external packaging, such as bags or bundles (the weight varied between approximately 150 and 300 pounds), the internal division of the skeins tied together, whether in bundles or *scagne* (weighing between a pound and a half to ten pounds, the Spanish ones with ‘small strips of paper attached at the top with Arabic writing’), the length of the individual skeins, colour, brightness, thickness, strength, the presence of impurities (*brocchi*), the loss of weight and the main use they could be put to for cloth weaving (as warp, weft, or pile for various fabrics).¹¹

The quantity of silk traded in Italy during the Later Middle Ages and the early modern period is staggering, growing over the centuries until it reached several million pounds a year, thus bearing witness to the considerable quantitative level the vanguard sector reached in the Italian manufacturing production. Venice imported raw silk from various areas of the Mediterranean and Persia, usually transported on the state galleys that regularly sailed between Venice, the East and Spain. According to

⁸ Del Punta, ‘Lucca e il commercio’, 105–111; Pierre Racine, ‘Le marché gènois de la soie en 1288’, *Revue des études sud-est européennes* 8 (1970): 403–415.

⁹ Miguel A. Ladero Quesada, ‘La producción de seda en la España medieval. Siglos XIII–XVI’, in *La seta in Europa*, 125–139.

¹⁰ Molà, *The Silk Industry*, 55–72.

¹¹ Girolamo Gargioli, *L’industria della seta in Firenze: trattato del secolo XV* (Florence, 1868), 102–108.

the shipments aboard these convoys, between the fourteenth and fifteenth century hundreds of silk bales were carried each year on vessels that called in the Black Sea, at Constantinople, Negroponte, Modone and Corfu, for a total value of several hundreds of thousands of ducats.¹² But imports had grown exponentially two centuries later, when an average of around 1,500 bales of Persian and Syrian silk arrived in Venice each year via the city of Aleppo, with a peak of 2,400 bales, therefore between 350,00 and 750,000 pounds (if one calculates that each bolt weighed between 250 and 300 pounds).¹³ The silk of Asian origin was also imported in large quantities by Genoese and Florentine merchants, who had established the centre of their Eastern trade in Bursa, in the Ottoman Empire, between the fifteenth and sixteenth centuries.¹⁴

However, during the Later Middle Ages and early modern period the Italian silk industry progressively increased its use of locally produced raw materials. At the end of the sixteenth century Calabria was exporting 700–800,000 pounds a year, and the contract on the silk excise duties yielded the noble family of the Sanseverino's of Bisignano, who had its monopoly until 1483, the incredible sum of over 50,000 ducats a year.¹⁵ In Sicily almost the entire silk production was concentrated around the port of Messina to facilitate its purchase and transport for the merchants; around the mid sixteenth century approximately 1,200 bales, weighing 250 pounds each, left the island each year, for a total weight of 300,000 pounds, which grew to 2,400 bales, for a total of 600,000 pounds, in the last decade

¹² Eliyahu Ashtor, 'Il commercio italiano col Levante e il suo impatto sull'economia tardomedievale', in *'Aspetti della vita economica medievale'. Atti del Convegno di Studi nel X Anniversario della morte di Federigo Melis, Firenze–Pisa–Prato, 10–14 marzo 1984*, Federigo Melis. (Florence: Monte dei Paschi di Siena, 1985), 23 (Table I), 35 (Table II), 54 (appendix I).

¹³ Domenico Sella, *Commerci e industrie a Venezia nel secolo XVII* (Venice–Rome: Istituto per la Collaborazione Culturale, 1961), 111–112.

¹⁴ Halil Inalcik, 'The Ottoman State: Economy and Society, 1300–1600', in *An Economic and Social History of the Ottoman Empire, 1300–1914*, ed. Halil Inalcik et al. (Cambridge: Cambridge University Press, 1994), 218–252.

¹⁵ Giuseppe Galasso, *Economia e società nella Calabria del Cinquecento* (Milan: Guida Editori, 1980), 147–148; Tedora Iorio, *Produzione e commercio della seta in Calabria nel secolo XVI* (Naples: Arte tipografica, 1988).

of the century.¹⁶ Between the second half of the sixteenth and the beginning of the seventeenth century, an amount ranging from 300,000 to 500,000 pounds of silk was produced in the Veneto and Lombard districts of the Venetian state, while the Milanese territory yielded 300,000 pounds, Florence 90,000, Mantua 70,000 and Ferrara 50,000.¹⁷ While these data are by no means exhaustive, since they do not include the silk production of regions of primary importance for which, unfortunately, we do not have complete information (Piedmont, Emilia, Romagna, Marche, Abruzzi), it is nevertheless testimony to Italy's transformation into one of the most important regions worldwide in the production of raw silk, with mulberry trees becoming a common feature in the country landscape.

Indeed, a unique characteristic of silkworm farming is its inextricable link with the cultivation of mulberry trees, the leaves of which are their only source of nourishment. By following the diffusion of mulberry tree plantations in Italy from the Middle Ages to the early modern period, it is therefore possible to outline a map of the production areas of raw silk in Italy. The Italian regions with the most ancient traditions in the field of sericulture were in eastern Sicily and the hilly coastal area of Calabria, where mulberry trees were planted by Arabs and Byzantines as early as the tenth and eleventh centuries. For centuries in south Italy the black mulberry tree (*Morus nigra*) was cultivated almost exclusively, while in 1434 a businessman introduced the white mulberry (*Morus alba*) in Tuscany, which adapted to different terrain more easily and thus became the predominant plant in sericulture in the central and northern areas of the country. In some of these regions mention is made of the presence of mulberries

¹⁶ Giuseppe, Galasso, 'Seta e commercio del ferro nell'economia napoletana del tardo Cinquecento', *Rivista Storica Italiana* 75 (1963): 615–640; Maurice Aymard, 'Commerce et production de la soie sicilienne aux XVIe–XVIIe siècles', *Mélanges d'archéologie et d'histoire de l'Ecole Française de Rome* 77 (1965): 622.

¹⁷ Molà, *The Silk Industry*, 232–236; Alberto Cova, 'Interessi economici e impegni istituzionali delle corporazioni milanesi nel Seicento', in *Economia e corporazioni. Il governo degli interessi nella storia d'Italia dal Medioevo all'età contemporanea*, ed. C. Mozzarelli. (Milan: Giuffrè 1988), 126; Francesco Battistini, 'La gelsibachicoltura e la trattura della seta in Toscana', in *La seta in Europa*, 297–298; Domenico Sella, *Crisis and Continuity. The Economy of Spanish Lombardy in the Seventeenth Century* (Harvard, Harvard University Press, 1979), 20; Giuseppe Coniglio, 'Agricoltura ed artigianato mantovano nel sec. XVI', in *Studi in onore di Amintore Fanfani, IV. Evo Moderno*, ed. Amintore Fanfani (Milan: Giuffrè, 1962), 340; Franco Cazzola, 'Polemiche e contrasti per l'istituzione dell'Arte della seta a Ferrara (1595–1620)', *Economia e Storia* 14 (1967): 297–298.

as early as the mid thirteenth century, but the decisive moment for their diffusion was in the fifteenth and sixteenth centuries, when the trees rapidly became widespread throughout nearly the whole of Italy, so much so that several historians have even spoken of a sixteenth-century ‘mulberry-mania’. These new cultivations were often actively supported by the state authorities who made it obligatory for land owners to plant a certain number of mulberry trees in the territory under their jurisdiction to favour silk production. From 1327 on, the local government of Modena demanded that at least three mulberry trees be planted for every fenced-in lot of land, followed in 1441 by Florence (five mulberry trees for every *pertica*) and in 1470 by Milan (one mulberry tree for every twenty *pertiche*), a regulation that was imitated elsewhere during the sixteenth century. In the meantime, the decision was taken to grow mulberry trees in public areas, in particular along the city walls, rivers and streets, and princely nurseries were created, such as the one in the Duchies of Mantua and Milan after the middle of the fifteenth century or that of the Duchy of Savoy in the sixteenth century, which had to supply the trees to anyone interested in cultivating them, buying the young plants in the areas with the most ancient traditions. This was by no means always a simple operation and at times it required considerable diplomacy, since the central governments mistrusted the diffusion of sericulture in nearby states that then could go on to become formidable competitors in the production of raw silk. For this reason the trees were often stolen or smuggled from one state to another, a problem felt particularly in Vicenza, where there is record of numerous mulberry trees being stolen and taken towards the lands of the Este, Lombardy and Piedmont from the 1480s onwards.¹⁸

Once the mulberry trees had been cultivated, the next step was the breeding of silkworms (*Bombyx mori*), the name of which varied considerably in Italy, from *vermicelli* to *cavalieri*, *bigatti*, *bruche*, *bargelli*, *mignatti*, or *bombici*. Breeding was done almost exclusively in the countryside by peasant families who saw silk production as an excellent way to increase their scanty income and involved the whole family in the activity, including the children, the elderly and in particular the women,

¹⁸ Francesco Battistini, ‘La diffusione delle gelsibachicoltura nell’Italia centrosettentrionale: un tentativo di ricostruzione’, *Società e Storia* 56 (1992): 393–400; Francesco Battistini, *L’industria della seta in Italia nell’età moderna* (Bologna: Il Mulino, 2003), 32–37; Molà, *The Silk Industry*, 217–232.

who played a preponderant role in the various operations involved in sericulture. Bound to the landowners by a sharecropping contract in most cases, the farmers were allowed to keep some of the cocoons they produced and resell them to either cornerers combing the country, or at the town markets specialising in this commodity, most widespread in Emilia under the name of *pavaglioni*. The diffusion of sericulture in Italy in the fifteenth and sixteenth centuries led to the writing of numerous texts or treatises in which writers of various origins – often humanists but also polygraphs – devoted themselves to giving breeders advice to maximise their silk production. It is hard to imagine a peasant family in Italy during the Later Middle Ages and early modern period carefully studying these writings while looking after the silkworms, but we cannot ignore the fact that some landowners, who had a certain amount of learning, transmitted this knowledge to their sharecroppers. In any case, the literature on sericulture is of great interest because it was nearly always based on the direct observation of agricultural practice at that time, and it can give us an insight into what was considered the best strategy to obtain a good silk harvest. One of the oldest texts, which is anonymous, goes back to 1461, and although it is preserved in the archives of Siena, the language in which it is written clearly shows a northern Italian influence. During the following century two interesting treatises were written by Levantio Guidiciolo in 1564 and Giovan Andrea Corsuccio in 1581, while other useful information can be gleaned from the section dedicated to silk in the *Specchio di scientia universale* (Mirror of universal science) by the Bolognese physician Leonardo Fioravanti, published in 1572.

The silkworm cocoon, varying in colour between white, yellow and light green, was made of a single, extremely thin, uninterrupted thread that could be up to several hundred metres long, and this was then unravelled in the silk-reeling process. This working activity was performed almost everywhere in the countryside by highly specialised women, the silk-reeling ‘mistresses’ (*maestre*). It involved immersing the cocoons in metal bowls filled with water and held over a stove so that the *sericin*, the natural glue in silk thread that guarantees its solidity, would soften. Once the end of the thread had been found with the aid of a small brush, the ends of a variable number of cocoons were joined and they were unravelled together to make the thread stronger, passing it around a reel to form the skein of silk. The combination of the bowl, stove and reel, which were present in considerable numbers in the silk-reeling centres and often run by true rural entrepreneurs, was given a variety of names in Italy: in the north it

was called *fornello* (stove), in the centre *caldaia* (boiler) and in the south *mangano* (mangle), and they varied in both dimensions and specific techniques depending on the latitude. The preparation of the raw silk thread could involve up to four women at the same time: one to identify the end of the cocoons; another, the real expert, who unravelled them in the water and joined them together, paying great attention that the thickness of the thread always remained the same; a third, usually younger, who stoked the fire under the basin with wood; and a fourth who would turn the handle of the reel.

The quality of the raw silk obviously depended a great deal on the skill of these workers, so much so that an expert entrepreneur could tell at a glance in which region it had been reeled. Indeed, Corsuccio does not hesitate in advising producers to ‘find good mistresses who reel the silk, and who are no novices to the work, since as soon as the silk is in the merchants’ hands, they immediately know where it came from’.¹⁹ The diameter and hence also the fineness of the thread of raw silk depended mainly on the number of cocoons – usually between eight and twenty – that had been joined together by the workers. However, this was not only a result of their expertise but was often also the result of a market choice, since the thread could be used as warp for valuable fabrics or as weft for cheaper and heavier cloth, depending on its thickness. For example, since they were supplying the urban industries involved in the weaving of velvets and satins, in the sixteenth century the sericulture districts of Vicenza and Tuscany concentrated on producing very fine thread, while the area around Verona had connections with the German and Flemish markets that used most of the silk for the production of tapestries and haberdashery, and therefore it concentrated on the production of a heavier, coarser semi-finished silk thread. Another decisive element in the quality and regularity of the raw silk was the number of skeins that were wrapped around the reel and, as a result, the number of strands that the reeler and her assistants had to follow at the same time in a single bowl. Once again, in this case it was possible to create a product of inferior quality but at a more competitive price, sacrificing quality for quantity.²⁰

Industries in the Cities

¹⁹ Corsuccio, *Il vermicello*, 60.

²⁰ Battistini, *L’industria*, 71–92.

Once reeling had been completed, the raw silk was tightly bound in skeins and sent to cities or towns where it underwent further kinds of treatment until it was finally transformed into cloth. Indeed, until the end of the sixteenth century these processes took place almost exclusively in urban centres, since for a long time government authorities and artisan guilds ensured that the cities had an unyielding monopoly on the more specialised stages of silk production, so that it was easier for them to control the quality of the finished product and make sure handsome returns went to their local merchants and workers. The second stage in the process of transforming the silk thread consisted in the rigid succession of silk throwing, dying and weaving. It was interspersed and supported by other processes that were equally important such as winding, doubling and warping. While the latter were performed by female workers who had no clear professional status, the others were of more importance and were usually entrusted to men with considerable technical skills. From the thirteenth and the fourteenth century onwards, in an attempt to protect their own interests, these more specialised craftsmen set about founding artisan guilds, even though they were not always recognised by the public authorities. From the thirteenth century onwards there was a guild of dyers and one of weavers of plain fabrics in Venice, but the throwsters had to wait until 1488 before the government allowed them to found their own corporative organisation; and while the weavers of Milan founded their own guild in 1461, the more than 150 throwsters in the city were still without one at the beginning of the seventeenth century.²¹

Since it was made of one uninterrupted strand, the raw silk obtained from top quality cocoons did not need to be beaten, carded and spun as did the other textile fibres – in particular wool, cotton and linen – that were worked in Italy during the Later Middle Ages and early modern period. However, silk thread obtained by throwing alone does not yet have the characteristics and resistance necessary to be used straight away in the weaving of high quality fabrics. It therefore had to undergo a certain degree of twisting, both to make it more robust and elastic – so it would be more able to resist the stress on the loom – and to obtain a particular and variable kind of shine. For this reason it had to undergo throwing, which in the thirteenth century was done by hand thanks to the spinning wheel, on which a single thread

²¹ Ettore Verga, *Il Comune di Milano e l'Arte della seta dal secolo decimoquinto al decimottavo* (Milan, 1917), xiii–xv, xxxv–xxxvi.

was wrapped around a spindle and then became a skein. Not only did this process require a great deal of time, but the two operations of rolling up the thread were not coordinated, with the final result of having a thrown silk of heterogeneous quality. These problems were overcome thanks to the creation of the mechanical silk mill, one of the most brilliant Italian technical inventions of the Middle Ages and early modern period. Over two metres in diameter and the same in height, with hundreds of spools on spindles that turned simultaneously supplying a corresponding number of reels where the skeins were formed with twisted thread, the mechanical silk mill was a machine of considerable dimensions and complexity. Its structure could become even more imposing by putting up to five machines (each called *valico*) on top of each other, so as to employ a single central engine that could reach over 13 metres in height and could occupy several floors in the same building.

The advantage of the silk-throwing mill lay in its ability to process numerous threads at the same time with very little manpower (sometimes just two people), by mechanically combining the turning of the spools on the spindles with that of the reels that gathered the thread once it had been thrown. Its efficiency was therefore immensely higher if compared with manual twisting, and the quality of the thread was much better. With the mechanical throwing mill it was also possible to twist the silk both to the right and to the left, but by using machines that turned specifically in one direction or the other. The twist to the right was called 'Z' or '*di filato*', while that to the left was called 'S' or '*di torto*'. The most valuable silk thread produced in Italy thanks to the use of the throwing mill was the *orsoglio*, also called *organzino*, and it was mainly used for the warp of the finest fabrics. The process was highly complex: first two threads of silk were processed separately with the Z twist, then they were doubled manually and went through the mill a second time with an S twist. Furthermore, by modifying the regulation of the rotating mechanism of the reels it was possible to vary the number of twist points per metre of silk, thus obtaining different light effects of the thread surface.²²

²² Flavio Crippa, 'Il torcitoio circolare da seta: evoluzione, macchine superstiti, restauri', *Quaderni Storici* 25 (1990): 169–212; Flavio Crippa, 'Dal baco al filo', in *La seta in Italia* ed., Luca Molà et al. 15–31; Carlo Poni, 'The Circular Silk Mill. A Factory Before the Industrial Revolution in Early Modern Europe', *History of Technology* 21 (1999): 65–85.

Unfortunately, little is still known about the origins of this highly complex and versatile machine. While we certainly have to put aside the long-standing historiographical myth that its origins go back to 1272, there is no doubt that the silk mill was designed – or at least perfected on the basis of a model that might even have been of eastern origin – in Lucca between the end of the thirteenth century and the early decades of the fourteenth century. When the registers of the Lucchese notaries mention it for the first time in the 1340s, it appears that the mill had already become a highly refined machine. Mention is also made in the same decade in the sources of Bologna and Venice, and in both cases it is linked to the silk experts who emigrated from Lucca, probably taking the secret of its construction with them.²³ The mills were soon divided into two great families: mills driven manually, and those driven hydraulically. In most Italian cities it was the simpler model that dominated, operated by a particularly robust man who made the central axis of the mechanism rotate from the inside of the mill. In other city centres, and in particular in the countryside of northern Italy from the seventeenth century onwards, the mills that were instead driven by a wheel put in motion by water from a river or a canal, and they were generally known as *mulini da seta*.²⁴

Thanks to the construction of a complex system of underground canals that allowed the capillary distribution of the water from the two rivers that flowed through the city, Bologna was at the avant-garde of this technology for centuries. The Bolognese authorities guarded the construction techniques of their silk mills jealously, as they were more advanced than those that were driven manually.²⁵ It would appear that the ban on silk mill constructors and expert throwsters was respected throughout most of the fourteenth and fifteenth centuries, but from the sixteenth century onwards the

²³ Florence Edler De Roover, *Le sete lucchesi* (Lucca, 1993), 47–53; Louis Green, *Lucca Under Many Masters. A Fourteenth Century Italian Commune in Crisis (1328–1342)* (Florence; L.S. Olschki, 1995), 277–279; Luca Molà, *La comunità dei lucchesi*, 139–144.

²⁴ Francesco Battistini, ‘Le principali tappe della diffusione del torcitoio circolare per seta nell’Italia del centro-nord (sec. XIV–XVIII)’, *Società e Storia* 69 (1995): 631–640.

²⁵ Alberto Guenzi and Carlo Poni, ‘Sinergia di due innovazioni: chiaviche e mulini da seta a Bologna’, *Quaderni Storici* 64 (1987): 111–127, Alberto Guenzi and Carlo Poni, ‘Un “network” plurisecolare: acqua e industria a Bologna’, *Studi Storici* 30 (1990): 359–377.

expansion of the industry and its growing popularity in many Italian regions proved too strong an attraction for some craftsmen. Thus, in 1510 a group of Bolognese throwsters who had stolen the techniques of the silk mill construction and taken it to nearby Modena were sentenced to death and excommunicated. In Modena the public authorities then gave instructions to place armed guards around the mill, as emissaries from the Bolognese government had threatened to set fire to it and destroy it. In 1538 other workers emigrated and managed to build a hydraulic mill in Trento, and this flow of knowledge continued from Bologna in the following decades, forcing the Bolognese authorities to imprison the guilty technicians or, if they could not put their hands on them, to have the effigies of them hanged by a foot painted on the walls of Communal Palace.²⁶

Closely linked to silk throwing and an indispensable aspect of its function was the work of thousands of women who wound and doubled the silk, threading it more than once from the bobbins to the skeins or intersecting more than one thread together so that it could be twisted more to make it more resistant. Winding was a relatively simple operation and consisted in the manipulation of a spindle with a bobbin on it, holding it in place with the little finger and ring finger of the right hand and making it turn with the thumb and index finger, while the left hand followed the silk thread, or in winding the fibre in a skein by a simple swift.²⁷ For this reason silk winding was carried out by unspecialised female workers from the lower classes, who thus had an indispensable source of additional income for their meagre family earnings or, in the case of single women, could avoid being dependent on charity. Indeed, it was usually the wives, daughters or widows of craftsmen or simple workers who were involved in this phase of the silk production process, and there were thousands of them in every Italian city where the production of silk fabrics was of importance.²⁸

²⁶ Pasquino Fiorenzi, *Le arti a Modena (storia delle corporazioni d'arti e mestieri)* (Modena: Mucchi, 1962), 111–112;

Carlo Poni, 'All'origine del sistema di fabbrica: tecnologia e organizzazione produttiva dei mulini da seta nell'Italia settentrionale (sec. XVII–XVIII)', *Rivista Storica Italiana* 88 (1976): 455; Giorgio Tabarroni, 'I filatoi idraulici di Bologna', *Il Carrobbio* 2 (1976): 391.

²⁷ Gargioli, *L'industria*, 5–7.

²⁸ Luca Molà, 'Le donne nell'industria serica veneziana del Rinascimento', in *La seta in Italia*, ed. Luca Molà et al, 423–431.

The throwsters gave the winders the raw silk partially twisted in modest quantities – usually just a few pounds – and in instalments, to make sure there was a constant supply for the machines. However, owing to the high overall value of the raw material, it was also possible that some of it was taken away from the spinners and then easily sold secretly to craftsmen, silk weavers, haberdashers or others who had no scruples about accepting the stolen silk. For many female workers this was a temptation that was impossible to resist, in particular when they were in financial straits. One extremely common ruse used by the spoolers was to immerse the wooden bobbins they were winding the silk around in water, taking advantage of the difference in weight to reduce the quantity of silk yarn they returned to the throwster (this was such a widespread practice that in the second half of the sixteenth century metal-covered bobbins were invented to obviate this fraud).²⁹ As a result, for centuries the silk industries suffered from a structural problem that was hard to resolve, and which meant the entrepreneurs had to bear the additional costs resulting from the monitoring of their workers, the pursuing of offenders with the guild authorities or, in many cases, the simple loss of the raw material owing to theft.³⁰ In Genoa a series of attempts were made to put an end to this phenomenon. In 1511 the Consuls of the Silk Guild decided to inspect their workers' homes to retrieve the stolen silk but the results were not particularly good, since they were 'insulted and beaten with serious wounds and left almost half dead', while in 1527 the guild was given permission by the government to create a 'women's jail' only for winders.³¹

Once the silk skeins had finally left the winders' hands and the twisters' workshops, they had to be dyed. This was a particularly delicate part of the production process and began with the so-called 'cooking' (*cocitura*) of the thread, immersing it in hot soapy water to eliminate all the sericin, which

²⁹ Carlo Poni, 'Piccole innovazioni e filatoi a mano: Venezia (1550–1600)', in *Studi in memoria di Luigi Dal Pane* (Bologna: CLUEB, 1982), 380–384; R. Berveglieri and Carlo Poni, 'L'innovazione nel settore serico: i brevetti industriali della Repubblica di Venezia fra XVI e XVII secolo', in *La seta in Italia*, 486; Molà, *Le donne*, 429–430.

³⁰ The same occurred in the silk industry of Lyon in the eighteenth century, see: Daryl M. Hafter, 'Women in the Underground Business of Eighteenth-Century Lyon', *Enterprise and Society* 2 (2001):11–40.

³¹ Paola Massa, 'L'Arte genovese della seta nella normativa del XV e XVI secolo', *Atti della Società Ligure di Storia Patria* 10 (1970):175–181; Carola Ghiara, 'Filatoi e filatori a Genova tra XV e XVIII secolo', *Quaderni Storici* 52 (1983), 155.

had been useful until then to facilitate the treatment of the fibre but that would have made the colours opaque if left in the silk. At first, the silk cookers were independent craftsmen who had their own workshops, but from the fifteenth century onwards it became more and more common for the dyers to do this operation themselves. The technique these latter craftsmen used to treat the silk varied depending on which dye was being used; as a result, during the Later Middle Ages and early modern period specific kinds of specialisations developed within the dyers' guilds, some of whom devoted themselves to working with just one raw material. The utmost silence reigned regarding production stages and modes, with the secrets either being handed down from father to son together with the management of the workshop or passed on to trustworthy apprentices.

Some of these collections of instructions have survived, the most famous of which was written in Venice in the second half of the fifteenth century by an anonymous craftsman who describes with discrete precision the techniques used to obtain a vast range of colours, persistently repeating, however, the need for his readers to keep the contents of his treatise secret. This veil of secrecy was openly contrasted by the Venetian Giovanventura Rosetti in the following century, when he published a vast collection of recipes entitled *Plichto de l'arte de tentori*, describing everything he had been able to learn – probably in exchange for good sums – from artisan masters from various cities in Italy on his patient searches over the years.³² However, for centuries the profession of dyer remained shrouded in what was almost a magical haze, probably also due to the limited understanding of the main chemical reactions that took place in their cauldrons. As a consequence, particular attention was paid to the possibility of fraud, which was difficult to discover for those who were not experts in the field. If the brilliance and resistance of the colours was to be guaranteed, it was important to make sure that only materials of the best quality were used, considering the value of the silk fabrics and the hope to guarantee they would last for a long time. For this reason all silk guilds issued severe regulations to avoid falsifications, forbidding absolutely any mixing of more valuable dyes with materials of a lower quality.

³² Giovanni Rebor, *Un manuale di tintoria del Quattrocento* (Milan: Giuffrè, 1970); Giovanventura Rosetti, *Plichto de l'arte de tentori che insegna tenger panni telle banbasi et sede sì per l'arte maggiore come per la comune* (Venice, 1548).

Many of the dyes used in the workshops of Italian craftsmen of either vegetable or animal origins (in this case, it was usually dried insects with a high colouring power) came from the East and were mainly imported by Venetian and Genoese merchants. Of Asian origin was indigo, used for the most valuable blue, as well as crimson, lake and brazilwood (*verzino*), dyes that were used to obtain various shades of red and of decreasing value. For red gradations, materials of less exotic origins were also used, such as madder, orchil and grain (*grana*), the latter being collected across the Mediterranean basin, from Greece to the Iberian peninsula, while Italian or Spanish saffron was commonly used for the yellow. The arrival of new types of dyes from the American continent in the sixteenth century was of particular importance and their quality was questioned for a long time by the silk guilds and local governments, who were suspicious of any pigment without a centuries-old tradition behind them and which could therefore harm the fame of the country's renowned silk goods. The greatest apprehension was caused by Mexican cochineal, which was obtained from the parasites of a particular species of cactus and was brought to Italy via Spain at the beginning of the 1540s. The first to sell this dye were the merchants of Burgos operating in Tuscany, and it was not long before the Florentine family firm of the Botti bought several lots and began experimenting with it on silk thread to see how it compared.³³ From Florence, cochineal spread to Venice, where it was first introduced in 1543, and then to several other cities, always provoking considerable discussion as to whether it should be used in industrial production or not. The dispute was not resolved until the middle of the sixteenth century, when silk weavers and dyers everywhere realised that it was a worthy substitute for crimson or grain in red dyes.³⁴

The final and most decisive stages of the silk production process consisted in warping and weaving. The first was mainly carried out by women, often from weavers' families, while during the Later Middle Ages and early modern period the production of silk fabrics became almost exclusively male territory. In the main production centres, which in the fifteenth and sixteenth centuries included

³³ Angela Orlandi, 'Zucchero e cocciniglia dal Nuovo Mondo, due esempi di precoce diffusione', in *Prodotti e tecniche d'Oltremare nelle economie europee, secc. XIII–XVIII*, ed. Simonetta Cavaciocchi (Florence: Mondadori Education, 1998), 485–487.

³⁴ For more on silk dying in the Renaissance, see: Molà, *The Silk Industry*, 107–137.

Venice, Genoa, Milan, Bologna, Lucca, Florence and Naples, several thousand weavers were working on the production of a vast range of fabrics. Italian workshops produced both goods of high value, such as brocades with gold thread, velvets with various heights of pile, damasks or satins, and fabrics that were lighter and less expensive, such as taffeta, *ormesini* (or *ermisini*, as they were called in Florence) and *sendal*. From the thirteenth century onwards, it was common practice not to concentrate on just the highest segment of the market, even if it constituted the lion's share, especially in the export sector. Preference was given to flexibility and to the production of goods aimed at customers from various social ranks, a clientele that expanded rapidly over the centuries.

During the sixteenth century, with the appearance of products that were to meet the most varied needs, the typology of the new fabrics invented in Italy underwent remarkable development. Of particular importance was the start of fabric weaving that coupled a warp of pure silk with a weft made up of less valuable materials such as left over silk (*floss* or *tow*), wool, linen or cotton. The result was a myriad of fabrics of which historians of the textile industry still know very little, and which are clearly represented by the list of the tens of thousands of silk cloth ells from all over Italy that were illegally deposited (since the laws prohibited the importation of foreign fabric) in the shops of Venetian mercers at the end of the XVI century: *buratti*, *canevazze*, *cataluffi*, *cusachi*, *dimiti*, *doblioni*, *felpe*, *ferandine*, *franzadi*, *manti*, *pagiete*, *sagiete*, *telette*, etc., with various internal variations and with a wide range of colours.³⁵ Alongside the products prepared by male weavers there was also a less important production that was generally entrusted to female workers who did not belong to the guilds: for example, silk veils, which also had a great variety of names, and for which Bologna was particularly famous but that were also produced in the thousands in Venice. Other articles included braids, ribbons and bands, trimming, drawstring, veils and belts and other haberdashery, which were produced in large quantities in the seventeenth century, and particularly in Padua.³⁶

³⁵ Molà, *The Silk Industry*, 89–185.

³⁶ Carlo Poni, 'Per la storia del distretto industriale serico di Bologna (secoli XVI–XIX)', *Quaderni Storici* 73 (1990): 93–167; Molà, *Le donne*, Andrea Caracausi, *Nastri, nastrini, cordelle. L'Industria serica nel Padovano, secc. XVII–XIX* (Padua: CLEUP, 2004).

It was common practice among silk artisans and entrepreneurs to imitate the goods of other cities that proved successful on the international market. Even though these imitations were facilitated by the considerable mobility of the workers specialised in all kinds of cloth, who could offer their know-how to other centres of industry, very often the competitors merely analysed the fabric to be copied very carefully and tried to reproduce it as accurately as they could, reproducing its weave, dimensions, colours and even its characteristic elements such as the selvages, which made it immediately recognisable by customers throughout Europe and the East. The search for innovative products led to imitations that varied over the years and in the kinds of fabrics, resulting in a kaleidoscopic circulation of textile goods between one centre and another. Thus, while in 1487 in Genoa the decision was taken to produce camocati Venetian style (*camocati ad Venetum modum*), in the sixteenth century the Venetian silk weavers asked their government for permission to weave black velvets Genoese style (*a la Zenoina*).³⁷ Florentine merchants active in Germany in the first decades of the sixteenth century exported large lots of ‘damasks Venetian style’ and ‘Lucchese style’,³⁸ and when Duke Cosimo de’ Medici began silk production in Pisa in the middle of the century he concentrated on the production of ‘ermisini Lucchese style’ and satin ‘Bolognese’ and ‘Genoese style’, with the precise aim of connecting the new industry with trade channels that had already been consolidated.³⁹ At times, the comparative advantage a city had was mainly due to its greater technical knowledge in a particular segment of the production process. Between the second half of the fifteenth century and the beginning of the sixteenth century the Venetians had managed to develop a crimson and purple crimson colour that was of better quality than that of any other Italian industry. This meant that foreign traders came to buy the threads dyed in those colours in the city and then took them to Genoa, Ferrara, Bologna and Florence where,

³⁷ Molà, *The Silk Industry*, 159–160; Franco Franceschi, ‘La grande manifattura tessile’, in *La trasmissione dei saperi nel Medioevo (secoli XII–XV)* (Pistoia: Centro italiano di studi di storia e d’arte, 2005), 383–386.

³⁸ Marco Spallanzani, ‘Tessuti di seta per il mercato di Norimberga intorno al 1520’, in *Studi in memoria di Giovanni Cassandro*, vol. 3 (Rome: Ministero per i beni culturali e ambientali, Ufficio centrale per i beni archivistici, 1991), 995–1016.

³⁹ Roberta Morelli, *La seta fiorentina nel Cinquecento* (Milan: Giuffrè, 1976), 12 note 46.

also thanks to Venetian weavers who had emigrated, they could then produce fabrics that were identical to the original goods and pass them off as Venetian.⁴⁰

Both the old and new centres of silk weaving wanted to have the monopoly over their competitors, reserving their internal market for the local industry alone, at least for the fabrics with a sufficiently developed production. As a consequence, a great number of laws and edicts appeared over the centuries, prohibiting the importation of nearly all silk fabrics from abroad. The Genoese government issued the first decree on the matter in 1423, the year in which the silk guild was officially founded, allowing, however, the sale of the goods of their own colonies in the East – including the centre of Caffa on the Black Sea, where Armenian, Georgian and Tartar artisans worked – as well as sendals, *dimiti*, samites and taffeta, the production of which was not widespread among the Genoese artisans.⁴¹ In 1457 Duke Francesco Sforza promised the merchants and weavers who were launching the silk industry in Milan that as soon as there were at least 80 looms in activity he would close the doors to any foreign goods, a promise he kept in 1460, when he allowed the importation of silk fabrics only for the making of garments for private individuals.⁴² Siena too, in 1480, prohibited the import of silk fabrics,⁴³ and during the sixteenth century there were countless other such acts.

Venice was particularly aware of the problem. From 1366 on, the Senate made sure that customs officials, who controlled and recorded all the bales and parcels of goods that arrived in the city from the mainland, prohibited the import of any foreign velvet or silk and gold fabrics. As time went by, the punishment meted out to offenders – that usually entailed the confiscation of the bolts and their public destruction in the market square at the Rialto (first cut in length and then burnt) – became harsher. However, the effectiveness of these deterrents was limited. As the Senate complained in 1423, the Venetian citizens even managed to have foreign silk goods arrive in one of the cities close to the capital

⁴⁰ ASV, *Arte della Seta*, b. 682, reg. 1, fol. 106v, 14 May 1515.

⁴¹ Massa, *L'arte genovese*, 82–84.

⁴² Verga, *Il Comune di Milano*, xii.

⁴³ Marco Ciatti, 'Note sulla storia dei tessuti a Siena', in *Drappi, velluti, taffetà et altre cose. Antichi tessuti a Siena e nel suo territorio* (Siena: Nuova Immagine Ed, 1994), 18.

where they had them transformed into clothes that could then be worn legally in Venice. A broad range of light fabrics (*sindoni*, *zendadini*, taffeta, veils) were excluded from Venetian fourteenth-century laws against the smuggling of silk goods, and most of these fabrics came from Bologna, since Venetian artisans paid little attention to them at the time. In 1421 there was still the possibility of not only transporting these less valuable products to Venice, but also of loading them on the state galleys that were setting sail for lands under Venetian rule in the Aegean, the Levant, Flanders and London. Even the importation of traditional goods from the Middle East was allowed; they had been redistributed throughout Europe for a long time thanks to the Venetian market, and their quality was still unrivalled in the fourteenth and fifteenth centuries. It was not until 1490 that a decree was issued forbidding the importation of *atalassi*, *melidari*, *tabini*, *ormesini* and satin from the Levant, with the proud declaration that while these fabrics had not been produced by Venetians in the past, luckily they were now doing so in abundance, and the quality and price equalled the originals.⁴⁴

A fundamental element in the success of Italian fabric production was the high quality of the patterns the weavers reproduced on the fabric, which was the fruit of Renaissance artistic creativity. In the more luxurious kinds, the pomegranate prevailed and was portrayed countless times in the paintings of the fifteenth and sixteenth-century artists.⁴⁵ However, very little is still known about the figures of those who designed the motifs for silk fabrics, although there is no doubt that there were artisan-artists who specialised in this field, and that their profession was regarded with a certain amount of prestige. Furthermore, their work was avidly sought after by the main silk workshops. In Florence the guild statutes called them *maestri levatori d'opere*, or used other Latin wordings such as *pictores sive levatores drapporum* and *pictores operarum drapporum*. We know the names of some of these Florentines, one of whom was Jacopo dello Sciorina, who is praised by Benvenuto Cellini in his autobiography as an ingenious and pleasant person, who was on familiar terms with Pope Clement VII.

⁴⁴ For archive references on the countless Venetian laws that prohibited the importation of foreign fabrics from the second half of the fourteenth century to the sixteenth century, see Molà, *The Silk Industry*, 262–263, 393–394.

⁴⁵ Rosalia Bonito Fanelli, 'The Pomegranate Motif in Italian Renaissance Silks: A Semiological Interpretation of Pattern and Color', in *La seta in Europa*, 507–530.

In 1418 the Silk Guild of Florence strived to protect these craftsmen's inventions by prohibiting any entrepreneur or weaver from copying the fabric patterns without the explicit permission – granted in exchange of payment – of the artisan or workshop that had commissioned them.⁴⁶ For those merchant-entrepreneurs who wanted to put fabrics with new designs on the market these patterns were no small investment. Around 1430 a businessman from Lucca, Castruccio di Poggio, resident in Venice, had come to an agreement with the brother of a renowned Venetian fabric designer, Bartolomeo Rugerio, who had just died, to buy all the deceased's 'designs for silk and gold fabrics' for the considerable sum of 70 ducats (approximately the equivalent of the yearly earnings of a high-ranking craftsman or the cost of buying two slaves). In the agreement di Poggio had stipulated that he was to have all the rights to these patterns, and that they were not to be made available to any competitors, but when he began to study the sheets, presumably with great curiosity, he realised – according to the evidence he gave in court – that he had been given the most inferior ones, the leftovers that other workshops had refused, while the more original drawings he had seen earlier were missing. It was his belief that they had been sold on the side for a considerable sum to another producer of gold and silk fabrics.⁴⁷ In the light of the lack of information we have about these designers, this episode is therefore of particular interest and shows an industrial environment that had to pay considerable attention to any development in design, since entrepreneurs tried to renew the demand for fabrics by constantly developing the models on offer, in order to stimulate even further a market that was already expanding rapidly.

Finally, the production of luxury silk fabric relied on the work of artisans who smelted gold and silver and then beat it into very fine leaves, which were then cut in long tiny strips and patiently wound around a thread of silk by female workers. The production of gold and silk thread developed very quickly from the thirteenth century onwards, hand in hand with the growth of the silk industry. During that century and the one that followed, three centres that were closely linked to fabric production

⁴⁶ Franco Franceschi, 'Un'industria "nuova" e prestigiosa: la seta', in *Arti fiorentine. La grande storia dell'artigianato. Vol. II*, 183–185; Umberto Dorini, ed. *Statuti dell'Arte di Por Santa Maria del tempo della Repubblica* (Florence 1934), 451–452.

⁴⁷ ASV, *Giudici di Petizion, Sentenze a Giustizia*, reg. 48, fols. 116v–117r, 31 July 1430.

or the trade of raw silk dominated the scene: Lucca, Genoa and Venice. In the archives of the Tuscan city the first apprenticeship contract for goldbeating goes back to 1251, and there are more and more documents regarding this profession over the following decades. During that period the goldbeaters of Lucca founded a '*Universitas*', which had at least 40 members in 1279. In that year they met in a church to discuss the problem of trading bovine intestines, which was both an indispensable part of beating gold and silver and acted as a separating membrane between the silk thread and spun gold. The high number of goldbeaters working in Lucca at that time probably made it difficult to have sufficient supplies of these intestines and as a result, in 1288, two entrepreneurs sent a couple of artisans they employed to Lyon to work there 'oxen's and calves' intestines'.⁴⁸ In Genoa the *battifolli* [leaf beaters] founded a guild with its own statute in 1248, and thanks to the vast amount of documentation in the local notarial archives various agreements for the profession of beating precious metals and its spinning have been preserved from the 1220s onwards.⁴⁹ A decree issued in Venice in 1248 mentions the tax levied on artisans 'who make gold cloth', who certainly supplied themselves with metal thread produced in the local workshops; and in 1268, on the occasion of the celebrations for the election of Doge Jacopo Tiepolo, the silk and gold cloth weavers paraded through the city with other guilds flaunting their rich fabrics, which even the servants following them were wearing.⁵⁰

For a long time the supremacy of Lucca, Genoa and Venice in the production and trade of gold and silk thread was unrivalled in Italy. It is true that during the fourteenth century and throughout the whole of the fifteenth century the Italian silk industries also received abundant supplies of spun gold and silver from Cyprus and Cologne, the only two production centres outside Italy that managed to distribute these goods throughout Europe and the Mediterranean basin. In 1373 Cologne even sent instructions to Venice on how to recognise the authenticity of Cologne spun gold, which the 1376 statutes of the Merchants' Court of Lucca allowed in the production of certain kinds of high quality

⁴⁸ Luigi Brenni, *L'arte del battiloro e i filati d'oro e d'argento* (Milan: Brenni, 1930), 44–45 and appendix 1.

⁴⁹ Brenni, *L'arte del battiloro*, 35–41.

⁵⁰ *Deliberazioni del Maggior Consiglio di Venezia*, vol. II, ed. Roberto Cessi. (Bologna: Forni, 1931), 306; M. Da Canale, 'La cronaca dei veneziani', *Archivio Storico Italiano*, 8 (1845): 614–616.

brocades, whereas any other kind of material produced abroad was forbidden.⁵¹ However, it was not until the 1430s that other two Italian cities that were rapidly developing their silk manufacturing, Florence and Milan, managed to establish an independent production of gold thread that could supply their own industries without being dependent on imports from competing centres. Thanks to the initiative of three Florentine entrepreneurs and the open support they received from the local silk guild (the *Arte di Por Santa Maria*), in 1420 numerous male and female craftsmen expert in gold beating and spinning were persuaded to leave Genoa and Venice and move to Florence. The operation was a success, to the point that in 1423 the Florentine government granted a reduction in export duties on the gold thread produced by the three supporters of the new industry. Their success finds further confirmation in the registration of two workshops of goldbeaters in the city cadastre of 1427, which grew to four in 1451, seven in 1460, 10 in 1461, 15 in 1464, 17 in 1472 and 19 in 1489.⁵² Milan took steps in this direction only after it had developed the production of orichalc thread (*oro de bacile*), an alloy that was similar to brass and looked like gold. Once again, it was the attraction to Milan of foreign craftsmen in 1452 that laid the foundations of the art, which therefore required official support from the Ducal authorities, as had been the case a decade earlier with the agreement signed between the Florentine silk entrepreneur Pietro di Bartolo and Filippo Maria Visconti for the weaving of silk fabrics.⁵³ During the sixteenth century it was this new production from Florence and Milan that had the upper hand over its older rivals, who were undergoing a period of relative decline.

Setaioli and Merchant-entrepreneurs

⁵¹ Margret Wensky, 'Women's Guilds in Cologne in the Later Middle Ages', *Journal of European Economic History* 11 (1982): 635–638.

⁵² Florence Edler De Roover, *L'arte della seta a Firenze nei secoli XIV e XV* (Florence: Sergio Tognetti, 1999), 87–88, Franco Franceschi, 'I forestieri e l'industria della seta fiorentina fra Medioevo e Rinascimento', in *La seta in Italia*, 410–412; Bruno Dini, 'I battilori fiorentini nel Quattrocento', in Bruno Dini, *Manifattura, commercio e banca nella Firenze medievale* (Florence: Nardini, 2001), 45–65.

⁵³ Maria Paola Zanoboni, '“De suo labore et mercede me adiuvavit”: la manodopera femminile a Milano nell'età sforzesca', *Nuova Rivista Storica* 78 (1994): 108–109; Patrizia Mainoni, 'La seta a Milano nel XV secolo: aspetti economici e istituzionali', *Studi Storici* 35 (1994): 892–893.

In the cities the entire production process was dominated by an entrepreneur, the *setaiolo*. He possessed a discrete capital that was often offered by wealthy merchants, who financed the business and took their part of the profits, in many cases also participating in the management of the firm. The *setaiolo* would purchase the valuable raw materials from international importers or local suppliers and would coordinate the various production stages using a huge amount of manpower and craftsmen whom he paid by the job. Finally, he would sell the fabrics on the local markets or abroad. He had a small group of employees in his workshop to carry out the administration and control the quality of the threads and fabrics during the various stages of production. The operation he was running was therefore far-reaching and a source of considerable profit. In every city these businessmen founded the Silk Guild (*Arte della Seta*), a corporative organisation that brought together silk entrepreneurs throughout Italy and whose statutes regulated most of the production and the relations with the workers. Ideally, the *setaioli* wanted to maintain their monopoly over the production and trade of the fabrics, therefore forbidding the wealthier craftsmen, who could afford to buy the raw silk themselves, from any independent trade of twisted or dyed thread or of fabrics. However, in some cases they had to come to a compromise, for example by allowing the weavers to produce and sell some of their production on their own. In cases where this was forbidden there could be real rebellions, such as the one experienced by the entrepreneurs of Lucca in 1532, when the weavers of the Tuscan city rose up against the new prohibition of using at least one loom independently, and with the so-called Revolution of the *Straccioni* threatened the political stability of the small republic.⁵⁴

Thanks to the survival of several series of account books and inventories, we are able to reconstruct the entrepreneurial biographies of some Italian *setaioli* in the Renaissance in various details. Florence is a particularly good source for this, since hundreds of administrative books from the workshops of Florentine silk merchant-entrepreneurs have been preserved for the fifteenth and sixteenth centuries. Many of these records are to be found in the Archives of the *Ospedale degli Innocenti*, a

⁵⁴ Marino Berengo, *Nobili e mercanti nella Lucca del Cinquecento* (Turin: Giulio Einaudi, 1965), 117–146.

charity institution for foundlings supported by the local silk guild.⁵⁵ The first silk trader to emerge clearly from these sources is Andrea Banchi, well known to silk historians because the detailed study of his business, which was carried out by an American researcher, has served as a comparison for any kind of microanalysis of the sector for a long time now. Banchi's career spanned no less than seven decades in the fifteenth century, from 1401, the year in which the 29-year-old enrolled in the guild of silk producers, to his death in 1462. Owner of a shop for the production of fabrics that he then sold at retail in Florence, Banchi acted almost exclusively in partnership with other entrepreneurs, always investing a considerable amount of capital – between around 4,000 and 5,000 florins – in his businesses. The raw materials he used, and which cost him up to 9,000 florins a year, came mainly from Persia and Spain, but he also imported considerable lots of raw Italian silk (from the Florentine Romagna, Marche, Abruzzi and Calabria) as well as from the island of Chios in the Aegean. The silk thread was then processed in Florence by a vast number of workers of both sexes, numbering a total of somewhere around 100 people, 7 of whom were employed in the main workshop as clerks, or receiving, controlling and packaging silk and fabrics. Approximately 30 looms worked non-stop for Banchi and were able to produce between 130 and 140 bolts a year, most of which were valuable fabrics such as brocades, velvets and satins. The cloth was then sold in the workshop in Florence (two thirds) or exported, in particular to Mantua and Geneva, the latter being one of the most important European banking centres of those times. However, Banchi had considerable difficulty in selling his products at the courts of Milan and Naples, in Rome and in the cities of northern Europe, Paris and Bruges in particular, where he was penalised by competition from other Italian silk traders and the lack of permanent representatives who knew the taste of the local clientele. Although his career was brilliant, he did not reach the heights of his profession and other Florentine *setaioli* could boast much greater wealth than his. Nevertheless, Andrea Banchi's tax declaration in 1427 was for a patrimony of 7,441 florins, which went up to around 18,000 florins (without counting his properties in the city and countryside which he had purchased in

⁵⁵ Bruno Dini, 'La ricchezza documentaria per l'Arte della seta e l'economia fiorentina nel Quattrocento', in *Gli Innocenti e Firenze nei secoli. Un ospedale, un archivio, una città*, ed. Lucia Sandri. (Florence: Studio per Edizioni Scelte, 1996), 153–178.

the meantime) at the beginning of the 1460s, a sum that made him one of the ten most heavily taxed figures in Florence.⁵⁶

Tommaso Spinelli, a fellow citizen of Andrea Banchi, started out differently. Born at the beginning of the fifteenth century, for most of his life Spinelli's existence focused around the Papal Curia. In 1419 he was in the service of the Alberti company in Rome, but his career really took off in 1433 when he opened a bank there, together with members of the wealthy Milanese family of the Borromeo. His financial activity made him Depository General of the Church in 1444 and he had close financial and personal ties with the various succession of Popes until his death in 1471. From 1454 on, Spinelli decided to invest some of the wealth he had accumulated in Rome in a company for the production of silk fabrics in Florence which, also thanks to the financial support of other partners, boasted an initial capital of 6,000 florins and was almost regularly renewed every three years. The operational details of this silk workshop are not all that different from Banchi's business. The same raw materials, mainly Persian and Spanish silk, with a considerable amount of Italian silk, predominated in Spinelli's company. The same can be said for the number of craftsmen and staff he employed: from 30 to 40 weavers, 35 female winders, 32 'mistresses of boiled silk', 3 throwsters, 3 to 4 dyers, making a total of around 100–110 people with around an additional dozen people employed in the *setaiolo*'s workshop in Via di Por Santa Maria. Once again, the production was aimed at the highest segment of the market. In the accounts we find gold and silk brocades, velvets with various heights of pile and patterned velvets, damasks and satins, in particular in the colours crimson and black. The annual profit rate of the Spinelli business was extremely high, going from 20 to 29%, compared with the mere 8% of Andrea Banchi's workshop. There is no doubt that the contacts with ecclesiastic circles he had developed during his banking career guaranteed such success, since they secured him an exclusive clientele whom he had already been supplying with fabrics since the 1440s, before he actually began producing them. This was basically the same trade policy the Medici business had followed in their silk

⁵⁶ Florence Edler De Roover, 'Andrea Banchi, Florentine Silk Manufacturer and Merchant in the Fifteenth Century', *Studies in Medieval and Renaissance History* 3 (1966): 223–285.

workshop during the fifteenth century.⁵⁷ Bishops, archbishops, cardinals and various figures belonging to the Apostolic Chamber were supplied with silk goods from Spinelli's workshop, and in addition to them were the aristocrats and wealthy bourgeois who bought his fabrics throughout Europe, from Milan to Geneva and even as far as Lübeck.⁵⁸

A final example of a Florentine merchant-banking business active in the silk sector is that of the Serristori. Founded by Antonio di Salvestro Serristori's children, the firm was mainly family run and active from the middle of the fifteenth century to the beginning of the sixteenth century, with a capital that managed to exceed 20,000 florins and with a profit margin that reached astronomical heights, on average varying from 45% to 68% and even reaching 83% in the 1470s and 1480s. The Serristori's area of operation was huge – their fabrics were not only traded in the main Italian centres, but also in Bruges, London, Lyon, Nuremberg, Antwerp and Constantinople. Among errand boys and clerks his workshop employed 24 people, who received from and consigned to the local workforce the inevitable Persian silk and also vast amounts of Calabrese silk thread, a novelty linked to the explosion of sericulture in southern Italy.⁵⁹

For more detailed information about individual silk entrepreneurs in other Italian cities we have to move into the sixteenth century, since outside of Florence the account books of earlier centuries are nearly all lost. For Genoa, one of the main European cities for silk production, we are informed about the operations by Vincenzo Usodimare di Rovereto between 1537 and 1542. An independent entrepreneur with a capital of average size for the local industry, equivalent to around 13,000 Genoese lire, Rovereto decided to specialise in a limited number of medium quality fabrics – velvets with a single height of pile, satins and taffeta, prevalently red or black – which were sold almost exclusively in the markets of Lyon and Antwerp. Unlike the Florentine *setaioli* in the fifteenth century, 75% of the

⁵⁷ Raymond De Roover, *Il Banco Medici dalle origini al declino (1397–1492)* (Florence: La nuova Italia, 1970).

⁵⁸ William Caferro, 'The silk business of Tommaso Spinelli, fifteenth-century Florentine merchant and papal banker', *Renaissance Studies* 10 (1996): 417–439.

⁵⁹ Sergio Tognetti, *Un'industria di lusso al servizio del grande commercio. Il mercato dei drappi serici e della seta nella Firenze del Quattrocento* (Florence, 2002), 43–105. For more on the Serristori business in general see: Sergio Tognetti, *Da Figline a Firenze. Ascesa economica e politica della famiglia Serristori (secoli XIV–XVI)* (Florence: Opus libri, 2003).

raw material that Rovereto used was from Italy, in particular silk from Messina for satins and Calabrese silk for velvets.⁶⁰ Over twenty years later, in 1563, the post-mortem inventory of the workshop belonging to another *setaiolo* from Genoa, Bartolomeo di San Michele, shows a similar trend. With an operative capital of 12,000 lire, when he died the businessman was producing 13 bolts of fabric through the same number of weavers – in each case it was ‘ordinary’ one pile velvet, and most of it was black.⁶¹ By contrast, we find a kaleidoscopic variety of fabrics listed in the inventory drawn up at the request of the Milanese *setaiolo* Giovan Antonio Orombelli’s widow in 1554, which mentions goods ranging from luxury cloth woven with gold and silver thread – we must not forget that at that time Milan had become one of the two Italian capitals for the spinning of precious metals – to more modestly priced light textiles such as *ormesini* and *cendal*. Orombelli’s clientele belonged to the highest circles of Milanese society, including names such as the family of Don Ferrante Gonzaga, governor of Milan in the name of the Hapsburgs, the clan of Spanish administrators such as the de Lunas and Todedo Osorios, as well as hundreds of other nobles, magistrates, professionals and members of the middle class of the Lombard capital. In his double role as entrepreneur – when he died he was employing five spinners, two dyers and no less than 71 weavers – and distributor of fabrics produced by other Milanese workshops, in the storerooms of his company he had almost 18,000 *braccia* of silks, which, at the ratio of 0.564 metres for every Milanese *braccio*, is the equivalent of around 10,150 metres of precious fabric, the production of which had required a higher quantity of raw silk than the amount used each year in the entire silk industry of Mantua during the same period. It is therefore no surprise that Orombelli’s patrimony, consisting in land, houses, workshops, clothes, furniture and furnishings, came to the majestic sum of no less than 50,000 *scudi*, which clearly shows how in the sixteenth century the production and commerce of silk fabrics allowed entrepreneurs to make a true fortune in a very short time.⁶²

⁶⁰ Paola Massa, *Un’impresa serica genovese della prima metà del Cinquecento* (Milan: Giuffrè, 1974).

⁶¹ Paola Massa, ‘La liquidazione della “volta da seta” di Bartolomeo di San Michele: aspetti tecnici ed economici’, *Atti della Società Ligure di Storia Patria* 19 (1979): 149–206.

⁶² Aldo De Maddalena, ‘“Excolere vitam per artes”. Giovanni Antonio Orombelli mercante auroserico milanese del Cinquecento’, in *Fatti e idee di storia economica nei secoli XII–XX. Studi dedicati a Franco Borlandi* (Bologna: Società editrice il Mulino, 1977), 339–363.

Conclusion

In conclusion, for Italy the silk industry was a sector of primary importance from the economic point of view. The breeding of silkworms and silk reeling were a fundamental source of income both for peasant families and landowners, becoming one of the main sectors in the agricultural production of the peninsula from the sixteenth century onwards. The successive processes of throwing, winding, doubling, dying, warping and weaving, with the connected professions of gold beaters and fabric designers, offered jobs to a good part of the population in both small and large cities where the silk industry had been developed. At the beginning of the seventeenth century a demographic census carried out in Bologna counted almost 24,900 people employed in the silk sector or dependent on it – either full-time or part-time workers and members of their families – in a population that totalled around 60,000 inhabitants, in other words, over 40%.⁶³ In the other main centres of production similar employment figures were given, ranging from 20,000 to 30,000 people during the sixteenth century. At that time, a variable percentage of between 20% and 35% of all the imports of the Kingdom of France and the Netherlands consisted of fabrics and silk thread produced in Italy. The success of this industry in Italy continued for a long time, even though later it concentrated in particular on the production of semi-finished goods. During the 1890s, 30% of the value of Italian exports was made of silk, and during the 1920s Italy still dominated a third of its trade worldwide.⁶⁴ It was therefore thanks to silk that for centuries Italy played a key role in the progressive expansion of economic globalisation.

⁶³ Poni, *Per la storia*, 95–96.

⁶⁴ Molà, *The Silk Industry*, xv, 14–19.

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