

Development of Sericulture in the Eastern Adriatic during the Austrian Administration

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The production of silk, the queen of natural fibres, began in ancient China and was a well-kept secret for millennia. As silk was used for a variety of purposes, not only in making luxury clothes, wallpapers, and other expensive textile items, but also in papermaking and the production of musical instruments and fishing gear, it became a much desired commodity, which the Chinese exported along the Silk Road routes all the way to the Mediterranean. When seedlings of mulberry trees, silkworm eggs, and the knowledge of silk craftsmanship arrived in Constantinople in the 6th century, the tradition of sericulture and silk craftsmanship spread to numerous Mediterranean areas, including Greece, Italy, France, Spain, Portugal, and the Eastern Adriatic. Based on relevant literature and some previously unexplored archival sources, this paper presents the development of sericulture (cocoon or pupa production) and silk craftsmanship (making silk products) in the Eastern Adriatic region during the 18th and 19th centuries. Our research focuses on Croatia, at that time under the domination of the Habsburg Monarchy and divided into two parts – the Kingdom of Croatia-Slavonia (with the capital in Zagreb) and the Kingdom of Dalmatia (with the capital in Zadar).

Introduction

Silk is often identified with luxury and classy style, which is well justified and not related only to fashion. The fact is that silk, compared to other natural materials, is very durable, not easily torn,² and highly resistant to heat, yet also

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1. Tea Đurović dealt with this topic in her BA thesis. This paper addresses the topic more broadly and is an introduction to a more elaborate study of sericulture in the Eastern Adriatic region we are planning to do in future.

2. The Islamic scholar Ibn Hisham (833 AD) wrote that the Prophet owned a silk shirt that he only wore in battles, as arrows could hardly pass through it. It was something like a bulletproof vest. Cf. Emil Heršak and Nenad Vidaković, "Euroazijske povijesne teme i 'putovi svile'," *Radovi – Zavod za hrvatsku povijest* 51/2 (2019): 294-295 (note 26). However, all natural fibres, including silk fibres, are very delicate, and poor storing conditions such as high humidity, bright light (which changes their colour), grease, dirt, and dust (the particles act as abrasives and can cause thread fracture) lead to their rapid decay. If it is stored in cluttered closets and drawers, the fabric can become deformed, with dry folds that can also cause thread fracture. Besides, moths, other insects, and microorganisms pose a great danger as they feed on animal fibres. Cf. Ariana Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždin," *Radovi Zavoda za znanstveni rad HAZU Varaždin* 23 (2012): 421-422.

extremely delicate and soft. The beauty and delicacy of silk fabrics could not be replaced by any other fabric, as it allows the skin to “breathe”, keeping it warm in winter and cool in summer. All these exceptional properties of silk contribute to its exceptional value, which was recognized in the past equally as today. It is claimed to be the *queen of fibres*. Based on relevant literature and some previously unexplored archival sources, this paper presents the development of sericulture (cocoon or pupa production) and silk craftsmanship (making silk products) in the Eastern Adriatic region during the domination of the Habsburg dynasty in the 18th and 19th centuries. It focuses on the influence of the Austrian authorities on the development of these two activities in the Kingdom of Croatia-Slavonia and the Kingdom of Dalmatia,³ especially in the Dubrovnik area, where this tradition still exists, although on a lesser scale than at the time of its flourishing in the second half of the 19th century. The paper consists of three parts. The first presents the homeland of silk and the spread of silk production throughout Europe, while the second and third parts are about the beginnings of silk production in Croatia, Slavonia, and Dalmatia and its development in the 19th century.

The Silk Road and the Spread of Silk in Europe

The homeland of silk is China. Silk production started there based on the white mulberry tree (*Morus alba*), the leaves of which are the main source of food to silkworm (*Bombyx mori*). Mulberry trees grew mainly in northeastern China (in the Seriki province,⁴ after which silk got its Latin name *sericum*) and possibly in Japan, which is why it was not possible to develop the technique of silk manufacturing elsewhere.⁵ There is a legend saying that while the Chinese empress Leizu (also known as Si-Ling-Chi), wife of the Yellow Emperor (Huangdi, ca. 2697-2597 BC) was having tea under a mulberry tree, a silkworm cocoon fell into her cup.⁶ When the cocoon softened in the hot tea, the silk thread started to unroll, which brought the Empress to the idea of making different goods by using

3. The Kingdom of Croatia-Slavonia included the eastern part of Syrmia up to Zemun, which is today in Vojvodina (Serbia), and the Kingdom of Dalmatia included the Bay of Kotor, which is today part of Montenegro.

4. Ruža Ćuk, “Izvoz svile iz Dubrovnika u Veneciju u XIV veku,” *Istorijski časopis* 28 (1981): 17-25.

5. Heršak and Vidaković, “Euroazijske povijesne teme i ‘putovi svile’,” 2019, 280.

6. According to another Chinese legend, tea was likewise discovered accidentally several decades earlier. Boiled water was brought to Emperor Shennong (ca. 2727 or 2750 BC) by his servant. A tea leaf fell into it unexpectedly and the servant was punished because of that. However, the Emperor realized that the tea was good and moreover eliminated the fatigue he was suffering from. Heršak and Vidaković, “Euroazijske povijesne teme i ‘putovi svile’,” 2019, 282.

silk threads. Having obtained the Emperor's approval, the Empress ordered her subjects to start breeding silkworm on mulberry farms in order to produce silk.⁷

Numerous possibilities of using silk made this material a valuable resource that gave China a significant advantage over other civilizations of that time. Silk became very precious and the technique of silk production remained a well-kept secret for three millennia. Those who dared to export silkworms illegally risked a death sentence.⁸ Both silkworms and silk were used not only in making clothes, shoes, bags, wallpapers, and other fabric items, but also as papermaking materials (as paper was initially made of peeled and ground silkworm cocoons)⁹ and in the production of musical instruments and fishing gear. Silk became a coveted commodity. With the development of Chinese trade routes, silk found its way to the rest of the world. In Antiquity and the Middle Ages, it was transported to Europe both by land and by sea. "Silk Road" was a common term for the trade route that connected two ancient empires, the Roman and the Chinese.¹⁰ It was a winding route, six thousand kilometres long, which spanned from north-western China to the Mediterranean, and it is considered as one of the first routes that connected China with the West.¹¹ The Han dynasty¹² in ancient China paved the way for the Silk Road to protect and maintain the caravans and the trade as such. Silk culture spread rapidly to the West and the Mediterranean, where its popularity suddenly rose. It was highly appreciated among all, from priests to magnates, and coveted by everybody. When Christianity became the official

7. Ibid, 282; Mira Kolar, *Svilarstvo u Hrvatskoj: Od 18. stoljeća do 1945. godine* (Zagreb, 2007), 19.

8. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 19.

9. The oldest Chinese paper was not only made of raw silk, but also of weaved silk. See more in: Ana Bešlić and Andreja Dragojević, "Ručno rađeni papir: povijest, izrada, svojstva i vodeni znakovi," *Arhivski vjesnik (Bulletin d'archives)* 64 (2021): 90.

10. Baron Ferdinand von Richthofen was the first to use the term "Silk Road" or "Silk Route". See more in: Marcus Hernig, *Ferdinand von Richthofen. Der Erfinder der Seidenstraße* (Berlin, 2022).

11. The route was slightly modified in the 15th century, when sea routes were discovered as a better and more convenient trade alternative. Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 7-8. The Western Silk Road Tourism Development initiative should also be mentioned, which is a joint project by UNWTO and the European Union (2014-2020). The destinations that are part of the initiative are provided with the opportunity to connect the East and the West, ensuring conditions for peace, prosperity, and long-term sustainability. Cf. *Western Silk Road Roadmap*. Co-funded by the COSME programme of the European Union. Publication prepared in the framework of the cooperation between UNWTO and the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) of the European Commission (Grant Agreement SI2.729496) with the funding from the European Union's COSME Programme (2014-2020). See more in: Bao Jiang, Jian Li, and Chunxia Gong, "Maritime Shipping and Export Trade on 'Maritime Silk Road'," *The Asian Journal of Shipping and Logistics* 34/2 (June 2018): 83-90.

12. Heršak and Vidaković, "Euroazijske povijesne teme i 'putovi svile'," 2019, 313.

religion (the Edict of Thessalonica of 380 AD), Mass vestments were increasingly made of luxurious silk fabrics to indicate positions in the clerical hierarchy and accentuate the difference between the clergy and the believers. The Church very soon established that chasubles were to be made of silk.¹³ Because of great demand for this precious fabric in Antiquity and the early Middle Ages, it was paid in gold.¹⁴ In Rome, where silk was unusually popular, its price even led to an economic crisis, because too much gold leaked to the East. Because of this, Emperor Tiberius banned the wearing of silk, especially by men, and it was proclaimed to be "unsuitable" for them to wear silk clothes.¹⁵

The craft of silkworm breeding spread gradually to Japan, Persia, Asia Minor, Greece, and the Roman Empire. A turning point was the 6th century AD, when two monks from Serindia managed to smuggle silkworm eggs (the size of poppy seeds) hidden within their canes into the Byzantine Empire and imparted their knowledge of the silk production technique.¹⁶ Soon afterwards, Emperor Justinian (r. 527-565 AD) initiated silk production in Constantinople and thus China lost its monopoly. The Byzantine Empire very quickly became a new power regarding silk production and it managed to supply Europe with silk. The Byzantine tradition of sericulture and silk craftsmanship spread to various

13. Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždin," 2012, 420.

14. Around 174 AD, the weight of silk equalled the weight of gold (that is, 1 pound of silk = 1 pound of gold). Kolar, *Svilarstvo u Hrvatskoj*, 2007, 8 and 19.

15. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 8; Michael Bach, "Die Insektenwelt. Der unmittelbare Nutzen der Insekten," in *Natur und Offenbarung: Organ zur Vermittlung zwischen Naturforschung und Glauben für Gebildete aller Stände*, vol. 3 (Münster, 1857), 297.

16. According to Kolar, the monks arrived in the Byzantine Empire around 522 (p. 9), or rather ca. 551 (p. 19). Taking into account the records of the Byzantine writer Procopius (ca. 500-570), Heršak and Vidaković claim that it happened between 550 and 553/554, while A.V.G., a newspaper correspondent writing for *Gospodarske novine*, wrote in 1853 that it was in 555. It is possible that they could not agree on the year because, according to the information provided by A.V.G., the aforementioned monks visited Justinian's court on several occasions. When they first came to the court, they brought the mulberry seeds. Later on, the Emperor persuaded them to go back to China and bring the silkworm eggs. Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 9 and 19; Heršak and Vidaković. "Euroazijske povijesne teme i 'putovi svile'," 2019, 316-317; A.V.G., "Buba (kukac svileni, gusenica svilena)," *Gospodarske Novine: Izdaje jih na svetlo druztvo gospodarsko za za Hrvatsku i Slavoniju* 1/23 (June 4, 1853): 105-106. It should be noted that in No. 52 of the same paper, published on December 24, 1853, all journalists and correspondents writing for the paper in the current year (1853) were listed on page 247. There are some authors' initials, while others had their full name included. The list, however, does not include the initials A.V.G. The name that matches (to some extent) the initials is that of Ambroz Vranicani-Dobrinović, a knight, who is also listed. So, the initials of the author in No. 23 may not be correct, as perhaps they should have been A.V.D. (instead of A.V.G.). However, this research could not determine it.

Mediterranean lands – Greece, Italy, France, Spain,¹⁷ Portugal, the Eastern Adriatic (Albania, Dalmatia), and all other areas with adequate climate for silkworm breeding.¹⁸ The territory surrounding the Maritsa River (Evros) was the first area in Europe found to be suitable for silk production. Mulberry forests were planted on riverbanks and silk was produced in a number of towns, including Svilengrad¹⁹ (Bulgaria) and Soufli (Greece). Greece held the monopoly on silk production in Europe until the 12th century.²⁰ Having conquered numerous Greek and Italian towns, among which there were two centers of silk production, Corinth and Thebes, Roger II, the Norman king of Sicily, transferred the mulberry seedlings and had all their silk craftsmen deported to Sicily (Palermo) in 1146. Later on, he launched silk production in Calabria and Naples, which would become significant silk production centers.²¹ With reference to archival sources, Mesek claims that there were silk-weaving mills in the town of Lucca (Tuscany) in the 9th and 10th centuries. Silk craftsmanship soon spread to Florence, Genoa, and Bologna, while Venice became a silk production centre in

17. The Arabs introduced the technique of silk production in Spain, where numerous silk mills were soon opened across the country (e.g. in Valencia, Requena, Talavera, Jaén, Granada, and Toledo) and the technique of silk manufacturing was further developed and perfected. Cf. B. Rubens, "Der Seidenbau," *Oekonomische Neuigkeiten und Verhandlungen. Zeitschrift für alle Zweige der Land- und Hauswirthschaft, des Forst- und Jagdwesens im Österreichischen Kaiserthume und dem ganzen Teutschland* 67 (Prague, 1849), Blatt No. 24: 185-188; Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždina," 2012, 423. See more in: Eloy Martín Corrales, "The Silk Trade between Spain and the Islamic Mediterranean Area (16th-18th Centuries)," in *Spain and Portugal in the Silk Routes: Ten Centuries of Production and Trade between East and West: Comisión Española de la ruta de la seda* (Barcelona, 1st ed. 1998), 89-100.

18. Juraj Zelić, "Uloga dudovog svilaca (*Bombyx mori*) i bijelog duda (*Morus alba*) u svilogojstvu," *Šumarski list* 7-8, CXXV (2001): 414.

19. Etym. "silk city."

20. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 20. In the 19th century, silk production was revived in the town of Soufli. Almost all its inhabitants earned their living with silk production. There are two silk mills in the town even today (one belongs to the family of Yiorgos Tsiakiris and the other to the family of Kostas Mouhtarides). Cf. Iliana Mier, "Tradition der Seidenherstellung blüht in Griechenland wieder auf" (October 6, 2019).

21. Catheryn Cheal, "Silk," in *Encyclopedia of Greece and the Hellenic Tradition*, vol. 2: L – Z, ed. Graham Speake (London and New York, 2019), 1544; Ahmed Sayeed, *You Could Be the Winner, vol. II: The Winning Effort Begins with Preparation* (Bilaspur, Chhattisgarh), 2019), 18. It should be mentioned that A.V.G., Rubens, Bach, and Kolar state that it happened during the reign of Roger I (d. 1101): A.V.G., "Buba (kukac svileni, gusenica svilena)," 1853, 106; Rubens, "Der Seidenbau," 1849, 187-188; Bach, "Die Insektenwelt. Der unmittelbare Nutzen der Insekten," 1857, 298; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 20, whereas Mesek claims that Sicily was an important centre of silk production in the second half of the 10th century: Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždina," 2012, 422.

the 12th century.²² In northern Italy, silk production started in the 16th century, when mulberry trees were planted in the region of Piedmont.²³

The reputation of master weavers from Catanzaro (the capital of Calabria) spread to France.²⁴ The significance of silk production as an important industry was recognized by the French king Louis XI (1423-1483), who launched a national silk industry in 1466, gathering a number of Italian silk craftsmen, mainly from Calabria, who were supposed to teach the French the techniques of silkworm breeding and silk weaving.²⁵ The weaving loom, created by a weaver from Calabria, Jean Le Calabrais, who also gave it its name (*métier à tisser*), was brought to Tours in 1470, and later to Lyon.²⁶ By the 15th century, France had become a strong rival to Italy concerning silk production. Great demand for luxurious silk goods had a positive effect on silk production as well as on silk trade. Both activities prospered, especially when King Francis I granted a court licence for promoting silk trade to a couple of local merchants in 1535, and a monopoly on silk production to Lyon in 1540.²⁷ In the first half of the 16th century, Lyon became the centre of silk trade in Europe. The development of sericulture in Lyon, that is, breeding mulberry silkworm and obtaining raw silk thread for fibre production was encouraged by King Henry IV (1553-1610).²⁸ According to Sayeed, in the mid-17th century, there were more than 14 thousand weaving looms in Lyon and thousands of silk craftsmen (known as *canuti*) working at them, meaning that a third of the town population was sustained by silk industry.²⁹ Silk production in France suddenly stagnated at the end of the 17th century, particularly after the Edict of Fontainebleau, issued by Louis XIV in 1685 (also known as the Revocation of the Edict of Nantes from 1598), when thousands of silk craftsmen and other artisans, mostly Protestants, left France and moved to the neighbouring Netherlands, England, and Germany.³⁰ The religious refugees were wholeheartedly welcomed by the Prussian king Friedrich Wilhelm I, who recognized their value as the workforce necessary to start silk production in Prussia. This meant the reduction of court expenses on import duties³¹ paid for this expensive, but

22. Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždin," 2012, 422-423.

23. A.V.G., "Buba (kukac svileni, gusenica svilena)," 1853, 106.

24. Cesare Rossi and Flavio Russo, *Ancient Engineers' Inventions: Precursors of the Present* (Cham, 2016), 328.

25. Ibidem.

26. Ibidem.

27. Sayeed, *You Could Be the Winner*, 2019, 21.

28. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 21.

29. Sayeed, *You Could Be the Winner*, 2019, 21-22.

30. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 21; Melinda Watt, "Textile Production in Europe: Silk, 1600-1800," in *Heilbrunn Timeline of Art History* (New York, 2003).

31. At the beginning of the 18th century, the Prussian court paid around 16,000 thaler annually for the import of silk. In 1731, Friedrich Wilhelm I issued an order prohibiting royal servants to wear silk garments. Cf. Caroline Ring, "Berliner Maulbeerbaum zeugt

extremely popular and desirable fabric, mostly brought from France and Italy. His son Friedrich II continued his father's policy so in 1740s, he issued an order to plant mulberry trees wherever it was possible (especially in public and private yards, and in cemeteries).³² He granted special subsidies for the planting of mulberry trees and silkworm eggs were distributed free of charge, while those who exported eggs or damaged mulberry trees were severely punished. The situation was very similar in other countries, including Croatia.³³

An important centre of silk production in the Lower Rhine region was Krefeld (known as the "Samt -und Seidenstadt"), a port on the Rhine. The town turned to silk trade in the 17th century,³⁴ and thanks to the Prussian court subsidies (it came under the Prussian administration in 1702), silk production boomed there in the 18th century. Thus, Krefeld became one of the richest towns in Germany. In the mid-19th century (1849), almost every household in the town owned a weaving loom.³⁵ The development of silk production in England was supported by King James I, who, in 1608, encouraged his subjects to plant as many mulberry trees as they could with the aim to increase silk production.³⁶ In the 18th century, religious refugees settled in Spitalfield near London, where they continued producing silk. Spitalfield became renowned for a special floral pattern (*sete fiorite*).³⁷ The Industrial Revolution led to a boom in textile industry.³⁸

von preußischen Ambitionen," *Der Tagesspiegel* (December 20, 2020); A.V.G., "Buba (kukac svileni, gusenica svilena)," 1853, 106.

32. In 1782, there were around three million mulberries planted in Prussia. Cf. Bach, "Die Insektenwelt. Der unmittelbare Nutzen der Insekten," 1857, 298.

33. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 223.

34. Raw silk was processed, and the final products, expensive fabrics, were sold to wealthy noblemen and the clergy. The Mennonite refugee family von der Leyen held a monopoly on silk production.

35. Rolf Eckers, "Damals, als Krefeld Düsseldorf überragte," *Westdeutsche Zeitung* (December 18, 2017).

36. A number of inhabitants were willing to plant the trees. However, many of them planted the black mulberry instead of the white mulberry, which provides leaves for the silkworm. See more in: Gerald B. Hertz, "The English Silk Industry in the Eighteenth Century," *English Historical Review* 24 (1909), 710-727.

37. Mesek, "O liturgijskom ruhu u fundusu Gradskog muzeja Varaždin," 2012, 426; A.A. "Industries: Silk-Weaving," in *A History of the County of Middlesex, vol. 2: General; Ashford, East Bedfont With Hatton, Feltham, Hampton With Hampton Wick, Hanworth, Laleham, Littleton*, ed. William Page (London, 1911): 132-137.

38. See more in: Sayeed, *You Could Be the Winner*, 2019, 22-23; James Cundall, *The Everyday Book of Natural History: Comprising a Note for Every Day on the Flowers, Flowers, Insects, Birds, Animals etc. Most Commonly Observed On Rambles Into the Country Throughout the Year* (London and Bristol, 1866), 353-354.

The Arrival of Silkworm in Continental Croatia

Starting from the 18th century, silk production spread throughout the Croatian lands. The court in Vienna encouraged this industry because it was in accordance with its mercantilist and cameralist politics.³⁹ Empress Maria Theresa supported the introduction of silk production and a number of other Enlightenment ideas. Obsessed with the lavish beauty of silk, she wanted the nobles of Vienna and its rich citizens to be dressed as luxuriously as the nobles of Paris or Berlin, and at the same time to reduce the court's costs of importing silk. In addition, she recognized silkmaking as a lucrative sideline activity that was not subject to adverse weather conditions and that even the lowest strata of society (especially women, the elderly, and the unemployed) would be able to engage in without much investment, thus avoiding beggary. Similarly to other European rulers of that time, Empress Maria Theresa encouraged the development of both sericulture and silk craftsmanship in the Habsburg Monarchy, including Croatia, by issuing special grants.⁴⁰

The first steps in the development of silk production in the Croatian lands during the Austrian administration are documented in Rijeka, a free royal port at that time. In 1750, the authorities granted permission to P.G. Sacotti to plant 4,000 mulberry trees on land plots intended to be used as mulberry farms.⁴¹ As mulberry silkworms feed only on mulberry leaves (at an early stage 6-8 times and later 3-4 times a day), 1,500 kg of mulberry leaves are needed in order to breed 100 kg of cocoons,⁴² and it took about seven years for the mulberry trees to grow sufficiently to ensure enough leaves.

39. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 27.

40. Especially in Bohemia. Cf. Ibid, 11-12 and 25-27.

41. Ibid, 27.

42. F. Putinja, "Dudov svilac," in *Istrapedia. Istarska internetska enciklopedija*.



Figure 1. *Cocoons*

Note: Photo taken in 2016 at the Konavle Regional Museum – Zavičajni muzej Konavala.

It should be mentioned that the mulberry is an economically valuable tree exploited for its wood, leaves, and fruit, which is why it was grown in this area for centuries near settlements and cattle stables. Its fruit was used as human and animal food, and people also made brandy from it, while its wood, due to its small weight, was particularly valued in shipbuilding.⁴³ The main reason for

43. Marija Benić Penava, "Rasadnik Čibača (1911-1932)," *Analiz Zavoda za povijesne znanosti HAZU u Dubrovniku* 55/2 (2017): 534.

planting mulberries was, however, its leaves, which were used to feed domestic animals and were necessary for the cultivation of silkworm.⁴⁴

When the mulberry trees had grown enough, silk-spinning and silk-weaving mills were opened. In the 18th century, there were seven silk mills in Rijeka and the largest of them was owned by J.M. Marienni, with 12 looms and 40 workers at them.⁴⁵ However, the most suitable place for silkworm breeding was the Military Frontier, a developed and militarily regulated part of the Monarchy. In this area, members of numerous households as well as trained border guards were engaged in silk production. The population of the Slavonian frontier (1761) was instructed both in sericulture and silk craftsmanship. By Maria Theresa's edict issued in August 16, 1763, all inhabitants were ordered to plant white mulberries.⁴⁶ The Chamber of Commerce in Gorizia (Slov. *Gorica*, Germ. *Görz*) was proclaimed to be the main institution in the Monarchy (1763) in charge of maintaining and encouraging the development of silk craftsmanship as well as the cultivation of white mulberries. Thus, Gorizia became a significant silk production centre where a number of silk mills were opened.⁴⁷ Silk production then spread to the Varaždin Generalate (1764) and to Ban's Frontier (1772), and much later to the Karlovac Regiment, in Kordun (1787).⁴⁸

44. Ibid.

45. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 27.

46. Rudolf Bičanić, *Hrvatska ekonomika na prijelazu iz feudalizma u kapitalizam: Doba manufakture u Hrvatskoj i Slavoniji* (Zagreb, 1951), 146.

47. A.A. "Razne gospodarske vijesti," *Gospodarski list* 33/13 (1885): 104; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 22. Well-known silk craftsmen in Gorizia included: "Luiggi de Zorzini; Giuseppe Moise Luzzato; Giacomo Casarsa; Moise Marpurgo / Marpurgi, welcher hierzu vom Landesherm ein Privilegium erhalten hat (Privilegierter Fabrikant); Giuseppe Spazzalli; Francesco Casarsa; Gentile Gentilli; Franco. Locci; Giuseppe Riccian." Johann Christian Schebel, "Neueste detaillirte Uebersicht der Fabriken und Manufakturen in Oesterreich," *Journal für Fabrik, Manufaktur, Handlung und Mode* 28 (Leipzig, March, 1796): 202. More about Luzzato, brothers Marpurgo, and Spazzalli in: Helene Deutsch, *Die Entwicklung der Seidenindustrie in Oesterreich 1660-1840*, ed. Karl Grünberg (Vienna, 1909), 145-154. See also: Vlatka Leskovec, "Hrvatski krajevi u djelu Martina Schwartznera. Prilog istraživanju Staatskunde," *Radovi Zavoda za hrvatsku povijest Filozofskoga fakulteta Sveučilišta u Zagrebu* 43/1 (2011): 207-220; Johann Andreas Demian, *Statistik des Oesterreichischen Kaiserthums* (Leipzig, 1820), 111.

48. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 10; R. Bičanić, *Hrvatska ekonomika na prijelazu iz feudalizma u kapitalizam: Doba manufakture u Hrvatskoj i Slavoniji*, 1951, 146.

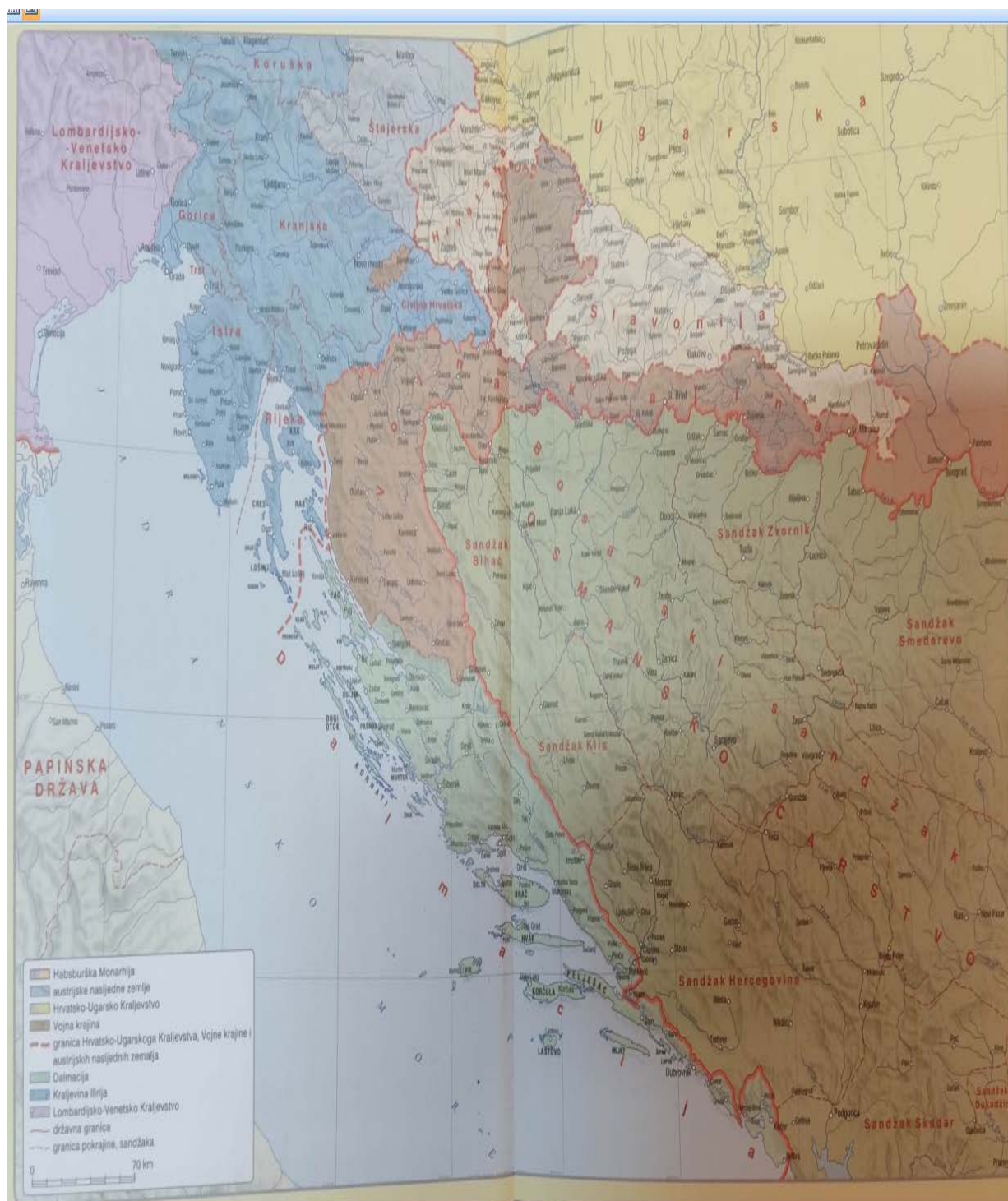


Figure 2. Map of the Croatian Lands (Including the Military Frontier) during the Domination of the Habsburg Monarchy

Source: Božena Vranješ-Šoljan, *Dalmacija. Stoljeće povijesnih i demografskih mijena 1815-1918*. Zagreb (2021), at the beginning of the book, inside the book cover.

Although sericulture was a typical industry of the Age of Manufactures, which took place in rural households, further stages in raw silk processing anticipated the industrial production in the 19th century. Silk production of the time can be divided into three stages – first, silkworms were bred in a farmhouse, in airy and clean rooms, where cocoons were obtained in about 40 days⁴⁹ (the first stage). Then they were boiled in hot water, in silk-reeling mills, and raw silk filaments were drawn (the second stage). Finally, in filatures (larger silk manufactures), raw silk was twisted into threads that were strong enough to be woven (the third stage).⁵⁰ The process of production was described in detail and distributed to the population in a number of published manuals and booklets on silk production, which was not the case with other industrial activities in the Croatian lands.⁵¹ As the Austrian authorities held the monopoly on raw silk processing from 1750 to 1827, they built numerous silk manufacturies (mostly silk mills, but also filatures) all over Croatia.⁵² Varaždin, the capital of Croatia at the time (1756-1776), became the most important center of silk manufacturing, and in 1784, a silk-reeling mill was opened there (*Defilatorium, Warasdiner Seiden Fabrik / Fabrica sericea varasdiensis*).⁵³

During the Napoleonic Wars (1797-1815), silk production in the continental part of Croatia rapidly stagnated as the Court in Vienna, burdened with the military campaigns, stopped encouraging the development of silk production.⁵⁴ Almost all silk mills in north-western Croatia were closed (except for those in Zagreb, in Svilaraska Street,⁵⁵ and those in Varaždin and Prelog). The frustration of waged workers in Varaždin's silk mill led to the tariff movement and the first strike of women (1803). The source of their frustration were miserable earnings that could not even cover the cost of food (experienced workers received 30 and apprentices 18 coins).⁵⁶

49. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 320.

50. Ružica Čunko, Željko Knezić, Tanja Pušić, and Ivo Soljačić, "Povijest izrade i proizvodnje tekstila u Hrvatskoj," *Annual of the Croatian Academy of Engineering* 1 (2019): 85. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 326.

51. Leskovec, "Hrvatski krajevi u djelu Martina Schwartnera," 2011, 207-220. The first manual on silkworm breeding was published in 1768 under the title *Brief Instructions on How to Plant Mulberry Trees (Kratki navuk kak murve sejati)*. Cf. Maja Andrassy, "Svila," in *The Croatian Encyclopedia of Technology* (Zagreb, 2021, updated 2022).

52. *Filatorium*, silk-spinning mill. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 36, 38, and 40.

53. Mirko Androić, "Prilozi poznavanju društvenih i gospodarskih prilika grada Varaždina u 18. stoljeću," in *Varaždin u XVIII stoljeću – Političko-kameralni studij 1769-1969* (Zagreb and Varaždin, 1972), 47.

54. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 51-54.

55. In 1878, the name of the street changed and it has been Preradovićeve Street ever since. Cf. Mira Kolar-Dimitrijević, "Zagrebačke tvornice svile s osvrtom na klasnu i oslobodilačku borbu radništva do nacionalizacije," *Povijesni prilozi* 7/7 (1988): 79.

56. Mirko Androić, "Ludbreg – gnijezdo republikanizma i boljševizma," *Podravski zbornik* 4 (1978): 45. Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 34.

From 1827, silk production was under the lease of the trade families of Isaac Hofmann (with his sons) and Lazarus Goldschmidt, who were registered as *K. u. k. privilegierte Grosshändler*. They held the monopoly on silk production during the next nineteen years.⁵⁷ In 1833, Isaac's son Emanuel (Manojlo) Hofmann (he was given credit for success in silk production and granted a noble title, thus becoming Hofmann von Hofmannsthal) had a modern manual of silk production published in Vienna (*Anleitung zur Seidenzucht*). It was translated into five languages, including Croatian (*Naredbe od izvoda Svile za Seljancze Slavonske i Harvatske*).⁵⁸ In 1848, he published a manual entitled *Instructions on How to Grow White Mulberries and Breed Silkworms* (*Nauk kako se imaju gojiti bele murve i svilene bube*).⁵⁹

Hofmann's engagement was of great importance for encouraging and relaunching sericulture and silk craftsmanship. In 1841, there were 46 silk mills (*filande*) in Croatia and as many as 13,000 households engaged in sericulture.⁶⁰ In Civil Croatia, there were 26 silk mills: Osijek had seven,⁶¹ Križevci had three, Đakovo, Virovitica, Požega, Vukovar, Varaždin, and Koprivnica had two mills each, and Cernik, Irig, Trpinj, and Zagreb had one each. The remaining 20 silk mills were located in the Military Frontier. There was one in Nova Gradiška, Oriovac, Podvinje, Morović, Golubinac, Stara Pazova, Zemun, Glina, Petrinja, Kostajnica, Đurđevac, Virje, Čazma and Garešnica, and two in Vinkovci,

57. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 64.

58. It was published in Vienna in 1833, and the publications were produced not only in the Roman script, but also in Cyrillic. The author gave 30 copies of the manual to the Croatian-Slavonian Economic Society (*List mesečni horvatsko-slavonskoga Gospodarskog Društva*) No. 9 (September, 1844): 129, 159. The second edition was published in 1858 (Emanuel Hofmann, Edlen von Hofmannsthal, *Anleitung zur Seidenzucht für den Landmann Ungarns*. Zweite verbesserte Auflage. (Neusatz [Novi Sad], 1858). See also: W.G. Dunder (Václav Jiří Dunder), *Ausführliche Geschichte der Seidenkultur, ihrer Einführung, Verbreitung, Fortschritte, Nützlichkeit und Wichtigkeit in China, Indien, Persien, überhaupt in Asien, in Griechenland, Italien, Spanien, Frankreich, Deutschland (Bayern, Württemberg, Sachsen, Baden ec.), in den Kaiserl. Oesterreichischen, Königl. Preussischen, Kaiserl. Russischen, Königl. Schwedischen, Königl. Britischen ec. Staaten, in Afrika, Amerika und Australien, von der ältesten bis auf die neueste Zeit, und begründete Anregung, Ermunterung und Anleitung zur praktischen, beschleunigten und gewinnreichen Seidenzucht*. In *histor., bibliograph., topograph., statist., merkantil., industrieller, technisch., ökonom., staatsökonom., legislativer, administrat., naturhistor., klimat., analyt., chemischer, dynam., patholog., pharmaceutischer ec. Hinsicht. Geschichtlicher Theil. Mit 40 Tafeln, Abbildungen und vollständigem Namen- und Sach-Register* (Vienna, 1855), 1116.

59. Emanuel (Manojlo) Hofmann, "Nauk kako se imaju gojiti bele murve (dudovi) i svilene bube (to jest gusine iliti kukci, koji čine svilu)." *List mesečni hrvatsko-slavonskoga gospodarskoga društva* 5 (1848): 65-71; 6 (1848): 84-89.

60. Bičanić, *Hrvatska ekonomika na prijelazu iz feudalizma u kapitalizam: Doba manufakture u Hrvatskoj i Slavoniji*, 1951, 152-153.

61. See more in: Kamilo Firingir, "Jedno stoljeće osječkog svilarstva (1761-1861)," *Arhivski vjesnik* 4-5, no. 1 (1962): 295-321.

Mitrovica, and Bjelovar. However, the monopoly of the Hofmann family and their manipulations with the purchase prices soon destabilized the industry. Decrease in the Croatian cocoon prices, which were almost by 70% lower than the Italian ones,⁶² caused a decline in the local silk production, therefore the number of silk mills (*filande*) was significantly reduced.

In Italy, for example, the lowest price of one libra (24 lots) of cocoons in 1846 was 50 kr. (karantan), while in Croatia, the price of one pound of cocoons (32 lots) was 30 kr.⁶³ In other words, one lot would be worth 2.08 kr in Italy and 0.94 kr in Croatia.

Juraj Haulik, Bishop of Zagreb (b. 1788 in Trnava – d. 1869),⁶⁴ was very interested in silk production, so together with some notables from Croatia (three bishops, some canons, ministers, lawyers, notaries, judges, court and ban's advisors, and other nobles) he established the Croatian-Slavonian Economic Society (*Hrvatsko-slavonsko Gospodarsko Društvo*) in February 1841.⁶⁵



Figure 3. Portrait of Juraj Haulik, Archbishop of Zagreb and Cardinal

Source: A.A. "Haulik, Juraj de Várallya," in *Hrvatska enciklopedija, mrežno izdanje*. Zagreb, 2021.

62. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 76 and 77.

63. Ibid, 77.

64. Goran Arčabić, "The Travel of Land-Surveyor Šimrak to 'Upper Italy' – A Contribution to the History of the Croatian-Slavonian Economic Society in the Middle of the 19th Century," *Povijesni prilozi* 26 (2004): 169-180; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 92-93. See more in: Franjo Emanuel Hoško, "HAULIK, Juraj (Georgius)," in *The Croatian Biographical Lexicon* (Zagreb, 2002).

65. See also: *Pravila hrvatsko-slavonskoga Gospodarskoga Društva* (Zagreb, 1841).

The aim of the Society was to improve agriculture, therefore its branches were founded in a number of larger towns. The first president was Haulik himself, who was committed to the development of silk production. Owing to his origins, he was aware of the benefits of silk production, which encouraged him to re-establish silk industry in Slavonia.⁶⁶ With the establishment of the Economic Society, silk production was gradually revived.

Following the example of the German journal of agriculture and rural development *Landwirtschaftliches Wochenblatt* (which started to be published in 1834) and the French journal *Agriculture pratique* (from 1836), the Society launched the *List mesečni hrvatsko-slavonskoga gospodarskoga društva* (in 1842),⁶⁷ which soon became the most important newspaper on economic issues, among which sericulture and silk craftsmanship were prominent for years. The first issue included an article on *Morus multicaulis* and its characteristics.⁶⁸

In 1845, the Society founded the Economic Institute at Ksaver in Zagreb, where young men from the countryside were trained in gardening, fruit farming, beekeeping, and sericulture. That same year, considering it necessary to engage educated persons in training inexperienced young men, the Society sent Vasil Šimrak, a land-surveyor who was proficient in Italian, to Lombardy (part of the Habsburg Monarchy at that time) to learn about farming and sericulture.⁶⁹ Upon returning to Croatia, Šimrak regularly wrote informative articles on silkworm breeding, published in *Gospodarske novine*. However, the interest of population in the newly gathered information was less than satisfactory and the bad situation in silk production was attributed to the low purchase price of silkworm cocoons.⁷⁰

The Revolution of 1848 affected the further development of silk production,⁷¹ so from 1848 to 1860 it was under the protection of the Croatian-Slavonian Economic Society.⁷² The plan of the Economic Society was not equally accepted in all territories where it had influence.⁷³ There was a noticeable progress in

66. Silk industry was highly developed in Slovakia and Haulik's father was also engaged in silkworm breeding. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 68.

67. The first issue of the newspaper was published on January 26, 1842. From 1842 until the end of 1849, the name of the newspaper was *List mesečni hrvatsko-slavonskoga gospodarskoga društva*, but from January 1850 until December 1852, the name of the newspaper changed into *List Društva gospodarskoga hrvatsko-slavonskoga*; from January 1853 until April 1855, it was called *Gospodarske novine*, and since April 1855 it has been published as *Gospodarski list*.

68. A.A. "Dud filipinski (*Morus multicaulis*)," *List mesečni hrvatsko-slavonskoga gospodarskoga društva* (1842): 68-70.

69. Arčabić, "The Travel of Land-Surveyor Šimrak to 'Upper Italy'," 2004, 169-180.

70. Ibid, 171.

71. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 84.

72. Ibid, 128.

73. At the end of 1912, the Croatian-Slavonian Economic Society had 110 branches: in the Modruš-Rijeka County, the Lika-Krbava County, the Varaždin County, the Bjelovar-

Slavonia, especially in the Đakovo and Virovitica counties, where a special supervisor was appointed to take care of planting mulberries and distributing seeds. Croatia Proper stagnated at that time, but Haulik, wishing to launch silk production there, continued actively encouraging it when he became the archbishop of Zagreb.⁷⁴

Although the major part of silk production took place in Croatia, 90% of its processing was carried out in Lombardy (Milan), where it was marketed as Hungarian silk. Among the wholesalers in Milan were brothers Emanuel and August Hofmann, sons of Isaac Hofmann. August Hofmann also owned a silk mill in the Nova Gradiška County (from 1848) and presented his products on the First Dalmatian-Croatian-Slavonian Exhibition in Zagreb, 1864.⁷⁵ The Habsburg loss of Lombardy (1859) contributed greatly to the devastation of silk production in Croatia.⁷⁶ In spite of all determination to recover silk production, the industry faced another obstacle. There was only a small number of people interested in silk production because of the high taxes imposed during the period of Bach's absolutism (1852-1859),⁷⁷ the low purchase price of silkworm cocoons, the complex system of cocoon classification, and the establishment of a tobacco monopoly, which caused resistance among the population.⁷⁸ Numerous articles on the benefits of silkworm breeding were published in *Gospodarske novine* with the aim of encouraging the population to continue producing silk. The fact that anybody could engage in this activity was especially highlighted in the articles. One of the most interesting was the article "On Silk Industry" ("O svilarstvu"), published on May 14, 1853 (by K.S.), which ended by stating that, "not a single agricultural industry is as lucrative as the silk industry and other uses of mulberry trees."⁷⁹

Križevci County, the Zagreb County, and the Požega County. Cf. http://arhinet.arhiv.hr/details.aspx?%20ItemId=3_8345. [Accessed 15 March 15, 2022.]

74. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 92-93. Juraj Haulik was appointed the first archbishop and metropolitan of Zagreb on December 11, 1852 (by a bull issued by Pope Pio IX) and his inauguration was on May 7, 1853 in the Cathedral. Three years later, he became a cardinal (April 1856).

75. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 174-177; G. Arčabić, "The Travel of Land-Surveyor Šimrak to 'Upper Italy'," 2004, 170.

76. Bićanić, *Hrvatska ekonomika na prijelazu iz feudalizma u kapitalizam: Doba manufakture u Hrvatskoj i Slavoniji*, 1951, 154.

77. See more about the state of the country at the time in: Mirko (Emerich) Bogović, *Politische Rückblicke in Bezug auf Kroatien* (Zagreb, 1861).

78. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 98-99.

79. K.S., "O svilarstvu," *Gospodarske Novine: Izdaje jih na svetlo društvo gospodarsko za Hèroatsku i Savoniju* 1, no. 20 (1853): 93-94. Note: In No. 52 of the same paper (December 24, 1853), on page 247, all co-authors and correspondents of that year were listed. There were only some initials listed, while most authors' names were given in full. The initials K.S. are not mentioned and none of the names included in the list matches them. Kolar assumes that the initials refer to Ivan Kukuljević Sakcinski (Kolar, *Svilarstvo u Hrvatskoj*, 2007, 100).

Ban Josip Jelačić was appointed to head the organization, which led to a range of changes.⁸⁰ A great number of members of the Croatian-Slavonian Society took part in the attempts to revive the silk production. Among them was Jelisava Prasnička (née Bertić), the first woman to write about silk production. Together with her two nieces, she bred silkworms on a leased demonstrational property in Biškupac near Varaždin and presented her goods at the Exhibition in 1853.⁸¹ One of the ideas was that literate individuals who could understand regulations and instructions should be employed on communal mulberry farms. They considered setting up a shareholding company under state protection, which was to focus on silk production.⁸² Lovro Ošterc suggested that the final products should be produced in Croatia and sold at a better price, and for this purpose, it would be necessary to build a large silk mill as a joint-stock company (with 1000 shares worth 20 forints each), which should be related to the establishment of a home for the poor. This would help Croatia solve the problem of beggars, as both they and the unemployed could work at the silk mill.⁸³

Reviving silk production in north-western Croatia was enthusiastically advocated, but nevertheless failed because of a new propulsive agricultural industry, fruit farming. Many mulberry farms were converted into fruit farms. A survey carried out in 1854 showed that there were a great number of people interested in continuing silk production, but foreigners in the Bach administration were not interested in the economic growth of Croatia.⁸⁴ In spite of this unfavourable situation, certain measures were taken to enhance silk production, as evident from numerous articles in *Gospodarske novine*, such as the one "On Silk Production, Agriculture, and Viticulture" ("O svilarstvu, poljodelstvu i vinodelstvu," 1854) by Franjo Ž. Wunsch, a retired mayor. He pointed out that silk production made it possible for women, children, and the elderly to earn money, adding that this industry was more stable than wheat-growing as the latter was threatened by unfavourable weather conditions.⁸⁵ From the mid-19th century, silk production developed in many European countries. Due to a silkworm epidemic in 1885, a crisis ensued in most European industries, first in Italy and then in France.⁸⁶ Silkworms in Croatia remained healthy for a certain

80. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 106.

81. *Gospodarske Novine* 2, no. 51 (1854): 90; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 99-100.

82. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 107-109.

83. *Ibid*, 109.

84. *Ibid*, 106-109.

85. *Gospodarske Novine* 2, no. 35-46 (1854): 159-160, 165-166, 168-169, 173-174, 179-180, 181, 184, and 187-188. See also: Mathias Stopfer, *Lehrbuch über die Militär-Gränz-Verwaltung des österreichischen Kaiserthums* (Graz, 1841), 291.

86. The French government supported Louis Pasteur to conduct a research into the causes of the epidemic on silkworm rearing farms in southern France (1865-1870), where he managed to isolate the disease agent. See more in: Hans Baumann, *Geschichte der*

period, which was a mark of silk quality in Croatia. Croatia was swarmed by Italian traders, as they concluded that silk produced in Zagreb was a quality silk and could be compared with the best Italian silk.⁸⁷ As a result of this, Austria tried to take advantage of the situation and launch a more intensive development of the industry.⁸⁸ Unfortunately, silkworm disease soon spread in Croatia as well.

Notwithstanding, certain measures were taken to improve silk production. The best example is the undertaking of Antun Vukasinović, a postal clerk from Rijeka. He invented better silkworm rearing beds (*ljese*) and improved the silkworm breeding kit, presenting them at the branch office of the Economic Society in Zagreb (Agram). In 1857, he published the instructions on silkworm breeding in German and Croatian.⁸⁹ The instructions were, as the very title of the manual said, intended for less than well-off farmers and craftsmen, their wives and children. There were attempts to downplay the spread of silkworm disease in Croatia, but at the same time the Society was looking for ways to overcome the crisis.⁹⁰

Therefore, the Economic Society decided to stimulate (1858) the most efficient silk craftsman with 120 golden ducats as a reward each year.⁹¹ Ferdo Rusan, a retired military officer and poet from Virje, described the crisis in silk industry in 1859: "The silk mill in Virje used to produce 800 pounds of pure silk, and this summer it hardly produced 12 pounds (...) And where there is no seed, how can there be any crops?"⁹² A solution to the problem was breeding Pajasen silkworms instead of mulberry silkworms,⁹³ favourable loans approved by Ban Josip Šokčević

Heilkunde: Medizin vom Mittelalter bis zum 1. Weltkrieg und ihr Zusammenhang mit der wissenschaftlichen, technischen und sozialen Entwicklung (Gütersloh, 2004), 262-264.

87. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 132.

88. Elvis Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine. // Sericulture in the Zadar Area between 1852 and 1860," *Historijski zbornik* 63/2 (2010): 421-422.

89. Antun Vukasinović, *Nauk o dudarstvu, bubarstvu i svilarstvu, kojim naši seljaci, siromašni zanatci, žene im i djeca za kratko vrieme veliki dobitak steži mogu. Po mnogolietnom vlastitom izkustvu i s obzirom na štednju vremena, posla i troška izdao o svom trošku Antun Vukasinović* (Zagreb, 1857). Later on, he became the person in charge of sericulture in the Virovitica County and an improved edition of his book was published in Osijek, 1867. Anton Wukasinović, *Praktische Regeln zur Maulbeerbaum und Seidenzucht mit besonderer Rücksicht auf Vereinfachung und Zeitersparniß. Für mindervermögende Landleute, deren Weiber und Kinder verfaßt und durch vieljährige praktische Erfahrung erprobt. Zweite verbesserte und vermehrte Auflage* (Essek [Osijek], 1867). See more in: Kolar, *Svilarstvo u Hrvatskoj*, 2007, 121-122.

90. See more in: Kolar, *Svilarstvo u Hrvatskoj*, 2007, 131-134.

91. A.A. "Važnost godine 1857. za naše gospodarstvo," *Gospodarski list* 6/5 (1858): 21-22.

92. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 114-120 and 140.

93. Pajasen is a silkworm whose larva could feed on the leaves of oak and beech trees, and which thrive in the territory of Croatia. It is resistant to drought and can be bred easily. At that time, it was widespread in France, Italy, and Hungary. Cf. Oskar

(1863), and the guaranteed minimum purchase prices for cocoons, which were pretty high at that time. Thus, old silk mills were re-opened during his rule.⁹⁴ However, silk production could not be revived,⁹⁵ mostly because of the contaminated mulberries and infected silkworms and the low purchase prices, which demotivated the farmers. After the Austro-Hungarian Settlement of 1867, numerous changes took place in Croatia. Croatia and Slavonia became part of the Hungarian and Dalmatia of the Austrian part of the Monarchy. The new political entity, the Austro-Hungarian Monarchy, led to some new developments. When Ban Khuen Héderváry came to power in Croatia (1883-1903), a number of stations for cocoon purchase were opened and silk production was encouraged again.⁹⁶ In 1887, the Sericulture Act (*Zakon ob osiguranju svilogojstva*) was passed, together with a range of regulations, with the aim to improve silk production.⁹⁷

The Hungarians wanted to launch silk production primarily in Slavonia, so they re-opened the mills in the counties of Virovitica, Syrmia,⁹⁸ and Požega, while in the central part of Croatia there was no interest in carrying out the Act provisions.⁹⁹ The Hungarian minister of agriculture, Pavao Beszerédy, held a monopoly on silk production in Croatia from 1892 to 1907, with a lease agreement of 15 years.¹⁰⁰ Later on, this industry was controlled by the Croatian Agricultural Bank, owned by the Church and the Alliance of Serbian Agricultural Cooperatives, which controlled silk industry in Croatia from 1908 to 1919. The central purchasing station in Slavonia, managed by the Alliance of Serbian Agricultural Cooperatives, was in Vinkovci, while all other stations in Croatia belonged to the Zagreb Silk Mill and were managed by the Croatian Agricultural Bank.¹⁰¹ Although silk produced in Croatia was not as fine and shiny as silk produced in France and Italy, it was of superior quality as it was stronger, heavier, and more durable.¹⁰²

Piškorić, "Pogled u šumarstvo Hrvatske pred 100 godina (Bogoslav Šulek: Korist i gajenje šumah, Zagreb 1866)," *Šumarski list* 9-10 (1966): 464. Between 1864 and 1867, there were many types of silkworms. Thus, the French farmer Guérin Meneville bred 11 types of silkworms feeding on different types of leaves. Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 164-168 and 181.

94. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 168.

95. Ibid, 173-174.

96. Ibid, 203-204.

97. The law was passed on February 14, 1887. Cf. ibid, 183, 204, 217-220, and 244.

98. The Syrmian County was a historical county that belonged to the Kingdom of Croatia-Slavonia. Today, parts of it are in eastern Croatia and south-western Vojvodina (Serbia).

99. See more in: Kolar, *Svilarstvo u Hrvatskoj*, 2007, 196-197, 201, 203-205, and 218-220; Pavao Beszerédy, "Proizvodnja svile u Hrvatskoj i Slavoniji," *Gospodarski list* 36/11 (1888): 87.

100. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 237-250.

101. Ibid, 293-309.

102. Alexander Buczynski, "The Development of Sericulture and the Production of Silk in Croatia // Razvoj svilarstva i proizvodnja svile u Hrvatskoj," *Povijesni prilozi* 21 (2001): 175 and 181.

However, due to strong competition, political turbulence in 1910, the Balkan wars (1912, 1913), World War I, epidemics, and the invention of artificial silk, silk production in Croatia eventually subsided.¹⁰³

The Arrival of Silkworm in Dalmatia

It is not known exactly when the mulberry silkworm began to be bred in the area of present-day Croatia for the purpose of obtaining silk. However, the Dalmatian towns (Rab, Pag),¹⁰⁴ where the silkworm was already bred during the reign of Emperor Justinian, when Dalmatia was under Byzantine rule, take precedence.¹⁰⁵ A record from 1018 confirms that silk was produced on the island of Rab (*Arba*) in the 11th century. This record states that 10 pounds of silk a year were used as a means of paying taxes to the Doge of Venice, Otto Orseolo (Urseolo), if five pounds of pure gold could not be paid instead.¹⁰⁶ Furthermore, Benedictine nuns from the monastery of St Andrew on Rab made and wove silk in the 13th century.¹⁰⁷ Both the cultivation of mulberry trees and the breeding of the mulberry silkworm in medieval Dalmatia are confirmed in the writings of Alberto Fortis, who mentioned that the people of Brač and Rab had been involved in the production of silk "since ancient times."¹⁰⁸

It has not been precisely established when silk production began in the Dubrovnik area. However, many documents testifying to the Dubrovnik silk trade in the 14th century have been preserved in the State Archives in Dubrovnik. The silk mostly originated from Kosovo (from Prizren) and Albania (from Valona, today's Vlorë), and partly from "Romania" (from Kostur).¹⁰⁹ At that time,

103. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 200, 203, 204, 219, 299, and 313.

104. Čunko, Knezić, Pušić, and Soljačić, "Povijest izrade i proizvodnje tekstila u Hrvatskoj," 2019, 80.

105. Ida von Düringsfeld, *Reise Skizzen, Vierter Band: Aus Dalmatien: Mit Anmerkungen von Otto Freiherr von Rheinsberg-Düringsfeld* (Prague, 1857), 257.

106. Ibidem; *Manuale del Regno di Dalmazia per l'anno*, vol. II (1872), 81; vol. III (1873), 323-324; Andrassy, "Svila," 2021; Nataša Bajić-Žarko, *Split kao trgovačko i tranzitno središte na razmeđu istoka zapada u 18. stoljeću* (Split, 2004), 124 and 132-133; Šime Peričić, "Svilarstvo Dalmacije u 19. stoljeću," *Radovi Zavoda za hrvatsku povijest Filozofskoga fakulteta Sveučilišta u Zagrebu* 15/1 (1982): 107-129.

107. Andrassy, "Svila," 2021; Katarina Horvat-Levaj, "Benedictine Monastery of St. Andrew in Rab. Contribution to the History of Construction," *Prostor* 27/2 (58) (2019): 195.

108. "feeding on black mulberry leaves" (!). Alberto Fortis, *Put po Dalmaciji // Viaggio in Dalmazia* (Split, 2004), 260.

109. Ćuk, "Izvoz svile iz Dubrovnika u Veneciju u XIV veku," 17-25; Danijela Jemo and Đurđica Parac-Osterman, "Production, Technology, Dyeing and Textile Trading in the Context of Maritime-Trade Routes of Dubrovnik," *Naše more* 63/1, Supplement (2016): 37.

Prizren was an important centre of production of that coveted and expensive fabric, which was placed on the Venetian market via Dubrovnik. Its final destination was mainly Venice, from where the people of Dubrovnik sometimes procured it – either for their own needs or for further sale.¹¹⁰ In addition, silk was imported from Turkey and from Western European manufactories (at the end of the 15th and during the 16th century), and, according to De Diversis, from Alexandria as well.¹¹¹

Roller believes that the Dubrovnik craftsmen of the 15th century had not mastered the art of silk production, which is why they invited Italian master craftsmen, mainly from Genoa and Lucca, to Dubrovnik.¹¹² Kolar assumes that, in the Dubrovnik area, the silkworm began to be bred in Konavle.¹¹³ This might be further suggested by the data provided by Roller, who mentions an Ivan from Konavle who, in 1485, was made apprentice to a silk craftsman invited to Dubrovnik from Tuscany.¹¹⁴ However, according to the data provided by Andrassy, silk was produced in Konavle and on Mljet from the 14th century. At that time, Dubrovnik traded in spun silk and silk thread, which it exported to Milan and Lyon.¹¹⁵

The “silk fever” that spread across Europe during the 16th century had an impact on the renewal of this industry in Dalmatia as well. However, at that time most of Dalmatia was governed by the Republic of Venice, which cut down Dalmatian forests on a mass scale for the purpose of building ships. This also included mulberry trees, which were quite suitable for shipbuilding. In this way, the Venetians protected their silk industry from the competition, because without mulberry leaves, silk production inevitably collapsed. As Dubrovnik was not under Venetian rule at the time, the Dubrovnik authorities advocated and encouraged the development of domestic silk production. Thus, as early as the beginning of the 16th century (in May 1517), the Republic concluded a ten-year contract with Ugo Cigalle, a silk craftsman from Genoa, who undertook to launch the *ars sete* (silk production) in Dubrovnik. In this contract, he promised to produce silk fabrics worth 2,000 ducats during the first year, and every following

110. Ćuk, “Izvoz svile iz Dubrovnika u Veneciju u XIV veku,” 1981, 17-25; Jemo and Parac-Osterman, “Production, Technology, Dyeing and Textile Trading in the Context of Maritime-Trade Routes of Dubrovnik,” 2016, 37.

111. Jemo and Parac-Osterman, “Production, Technology, Dyeing and Textile Trading in the Context of Maritime-Trade Routes of Dubrovnik,” 2016, 37-38.

112. Dragan Roller, *Dubrovački zanati u 15. i 16. stoljeću. Građa za gospodarsku povijest Hrvatske*, vol 2 (Zagreb, 1951), 82-83.

113. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 20.

114. Roller, *Dubrovački zanati u 15. i 16. stoljeću. Građa za gospodarsku povijest Hrvatske*, 1951, 82-83.

115. Andrassy, “Svila,” 2021; Jemo and Parac-Osterman, “Production, Technology, Dyeing and Textile Trading in the Context of Maritime-Trade Routes of Dubrovnik,” 2016, 39.

year the worth would increase by 1,000 ducats until it would reach the value of 10,000 ducats in the tenth and final year.¹¹⁶ In June of the same year (1517), the Dubrovnik government signed a contract with Matteo Magiolini, a silk craftsman from Lucca, who undertook to produce 3,000 cubits of silk damask each year, for which he was granted a loan of 1,300 ducats. In January 1518, the Senate chose three *oficiales artis sete*, whose task was to oversee the fulfilment of the contracts.¹¹⁷ For unknown reasons, however, this production soon dwindled and turned into a cottage industry, that is, into individual and sporadic production.¹¹⁸ There was no major silk production in Dubrovnik until the 19th century.



Figure 4. Map of Dalmatia

Source: Maude M. Holbach, *Dalmatien – Das Land, wo Ost und West sich begegnen. Mit 56 Abbildungen und einer Karte*, trans. Marie Seifert. Vienna and Leipzig, 1909 (at the end of the book, inside the book cover).

116. Roller, *Dubrovački zanati u 15. i 16. stoljeću. Građa za gospodarsku povijest Hrvatske*, 1951, 83.

117. Ibidem; *Lib. Con. Rog.* (January 28, 1518).

118. Roller, *Dubrovački zanati u 15. i 16. stoljeću. Građa za gospodarsku povijest Hrvatske*, 1951, 83.

Systematic planting of mulberry trees in Dalmatia began during the 17th and 18th centuries, when this activity was encouraged.¹¹⁹ At that time, Ivan Luka Garanjin (1722-1783) wrote about the breeding of silkworm in Dalmatia. He was one of the most prominent agronomists and physiocrats in Dalmatia, and a member of the Dalmatian Academy of Economics. He advocated the improvement of economy in the province, especially of beekeeping and silkworm breeding.¹²⁰ His family was involved in trade activities, part of which included exporting silk to Italy.¹²¹ Vincenzo Dandolo (1759-1819), who was the provincial civil governor (*Provveditore Generale in Dalmazia*) at the time and a pharmacist by profession, pointed out the benefits of silk production by his own example, by planting mulberry trees in his garden. The records of Alberto Fortis confirm that many Dalmatian families were engaged in silk production at the time, including those in the Lower Neretva.¹²² However, silk production in Dalmatia at that time was still not sufficiently developed and was fostered exclusively as a cottage industry.

Having taken over Dalmatia with the Congress of Vienna in 1815, Austria immediately launched a major campaign for planting mulberry trees as the first prerequisite for silk production. Seedlings were acquired from Lombardy and distributed free of charge to those who wanted to plant them. The areas of the counties (*circoli*) of Zadar and the Bay of Kotor (which at that time was a part of the Kingdom of Dalmatia) were at the forefront in terms of cultivating mulberry trees and breeding mulberry silkworm in Dalmatia during the 19th century.¹²³ In the middle of 1828, Horacije Pinelli, a physician and entrepreneur from Zadar who was a member of the Provincial Agrarian Commission, requested a subsidy in the amount of 1,500 forints from the Dalmatian government to establish some kind of school on his Smiljevac estate. His request was approved, and the first silk-spinning mill in the province started operating as early as 1829 – at first with one and then with five filatories for silk spinning and twisting, all procured in Italy.¹²⁴ Practical training for girls from Dubrovnik, the Bay of Kotor, and other

119. Mašo Čekić, "Godine kada je Boka Kotorska bila u zagrljaju svile" (October 20, 2018). Mulberry silkworm breeding in Istria began in the mid-16th century. Cf. Andrassy, "Svila," 2021.

120. One of his significant works is *Riflessioni economico-politiche sopra la Dalmazia* (Zadar, 1806), where he mentions silk and the favourable conditions for its production in Dalmatia on pages 45-46. See translation in: Ivan Luka Garanjin, *Reforma Dalmacije: ekonomsko-politička razmišljanja* (Zagreb, 2004), 81.

121. Bajić-Žarko, *Split kao trgovačko i tranzitno središte na razmeđu istoka zapada u 18. stoljeću*, 2004, 124 and 132-133.

122. "[...] the mulberries here grow to a surprising height in just a few years, and the silkworms that feed on them create beautiful silk." Fortis, *Put po Dalmaciji // Viaggio in Dalmazia*, 2004, 241, 257. Š. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 107.

123. Stijepo Obad, "Boka kotorska za neoapsolutizma // The Bay of Kotor during Neoabsolutism," *Časopis za suvremenu povijest* 41/3 (2009): 805-826.

124. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 117-119.

Dalmatian towns lasted two to three months, at the expense of the provincial government. The first large mulberry farm in the province was founded in 1834 by Pinelli on his Smiljevac estate, where by 1840 as many as 44,000 seedlings were planted. The government would buy them and either distribute them or sell them at a low price to farmers throughout Dalmatia.¹²⁵ Due to favourable geographical and climatic conditions, such plant nurseries were later also established in Zemunik near Zadar and in other parts of the province.¹²⁶ Towards the end of his life, Pinelli, however, fell into great financial difficulties, which led to the closure of his silk mill immediately after his death in 1845.¹²⁷

Silk production was quite developed in the Zadar area at that time. According to the data from 1846, about 4,000 mulberry trees were planted in the Zadar County.¹²⁸ In 1848, lawyer Domeniko Papafava opened a state-of-the-art silk mill in Zadar, which continued to produce the best silk in Dalmatia well into the mid-1880s.¹²⁹ Courses on silkworm breeding were also occasionally held at the Teachers' College for men, the Illyrian Preparatory-Boarding School (*Ilirska preparandija-konvikt*) founded in 1866 in Arbanasi (a district in Zadar), and they were conducted by Professor Nimira.¹³⁰ The institution featured a demonstrational garden, where future teachers were instructed in agronomy and sericulture. The provincial government of Dalmatia set up several silkworm-breeding farms (*bubara*) as well.¹³¹

At the turn of the century, Stanko Ožanić, an official of the Department of National Economy of the Provincial Government in Zadar, was employed as the provincial agricultural supervisor in Zadar from 1917 to 1919. His task was to promote economic development of the province, especially of viticulture, aquaculture, and sericulture.¹³² At the beginning of the 20th century, an exemplary plant for cocoon extraction (*bigattiere, bigatorij*) was founded in Zadar. It was owned by the Grünwalds, a Jewish family.¹³³ The population in the rest of Dalmatia

125. Ibid, 88, 109, 113, and 117.

126. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 422.

127. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 118-119.

128. Ibid, 109.

129. Ibid, 119-120; *Manuale del Regno di Dalmazia per l'anno*, vol. III (1873), 324, vol. IV (1874), 307, vol. V (1874), 291.

130. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 290.

131. Ante Bralić, "Zadarske srednje škole na hrvatskom jeziku i talijanska vlast 1918.-1921. // Secondary Schools in Zadar with Croatian as the Language of Instruction and Italian Rule between 1918-1921," *Miscellanea Hadriatica et Mediterranea* 6 (2019): 205-244; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 290.

132. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 289.

133. We have not been able to determine whether these were descendants of the Zadar noble family Grünwald-Bellafusa or perhaps of the Grünwald family, who, together with the family of the industrialist Schwarz, became co-owners of the company *Čakovečki paromlin i munjara* in 1900, which engaged in the production of flour and

was also engaged in silk production, for instance in Obrovac, Šibenik, Trogir, Split, Sinj, Skradin, and even in the climatically unfavourable Knin (where, for example, Ivan Krsto Nardini produced as much as 287 pounds of silk in 1850),¹³⁴ as well on the islands of Ugljan, Pašman, Rab, and Pag.¹³⁵ According to the data from 1885, the highest quality cocoons were produced on the island of Rab and in Skradin, which, thanks to the enterprising family of Antonio and Pietro Rossi (Antun and Petar Rosa), became the largest Dalmatian silk market of that time.¹³⁶ In 1852, their silk mill was visited by Ida von Düringsfeld, a Prussian baroness and writer, and her husband. She mentions in her travelogue that between 1831 and 1844, silk production in the Zadar County increased from 1,332 pounds to 4,920 pounds of cocoons and that Mr Rossi was awarded a gold medal in 1845 for special merits in promoting silk production.¹³⁷ Well equipped, the Rosa Silk Mill was considered to be an exemplary silk manufactory in Dalmatia.¹³⁸

According to the protostatistical data provided by Demian (1820), many silk products were manufactured in silk mills in the Kingdom of Dalmatia, especially in Dubrovnik and Split.¹³⁹ It has not been determined how many silk mills there were in Dubrovnik in 1820. We know for a fact that there was one silk mill (*Stabilimento della filanda*) in Dubrovnik at the beginning of the 19th century, located in Ploče and owned by the lawyer Antun Kaznačić. It was a small plant with one boiler and six primitive machines, procured in 1832 thanks to the teacher F.M. Appendini, in which silk was extracted by hand.¹⁴⁰ Two years later, more than 500 libras of cocoons were produced.¹⁴¹ In 1840, 53 silkworm breeders were recorded in the Dubrovnik County (*circolo*), and within just four years (1844) the number rose to as many as 98 breeders, that is, by about 85%.¹⁴²

electricity, used to power the first street lights in Čakovec. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 290; Lovorka Čoralić and Serdo Dokoza Nikpalj, "Grünwald-Bellafusa, plemićka obitelj u Zadru," in *The Croatian Biographical Lexicon*, ed. Trpimir Macan (Zagreb, 2002); A.A. "Čakovečki mlinovi d. d.," in *The Croatian Encyclopedia of Technology*.

134. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 113.

135. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 425 and 428-430; Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 1982, 114-115.

136. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 423; Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 109-120.

137. von Düringsfeld, *Reise Skizzen. Aus Dalmatien: Mit Anmerkungen von Otto Freiherr von Rheinsberg-Düringsfeld*, 1857, 256-257; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 150-151.

138. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 422-423, 426, and 431.

139. "(...) im Königreiche Dalmatien werden besonders zu Ragusa viele Seidenzeuge gefertigt; doch hat auch Spalato mehrere Seidenmanufakturen." Demian, *Statistik des Oesterreichischen Kaiserthums*, 1820, 111.

140. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 120-121.

141. Ibidem. Units of measure for silk: 1 libra = 24 lots; 1 pound = 32 lots. Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 77 and 326.

142. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 113.

According to the cadastral data from 1836/37, silk was produced in nearly all villages in Konavle, but almost entirely for family needs.¹⁴³ The tradition was passed down through the female line from one generation to another. Everything involving silk production was done exclusively by women, who did not have to know how “to read or write, but they had to know how to embroider.”¹⁴⁴

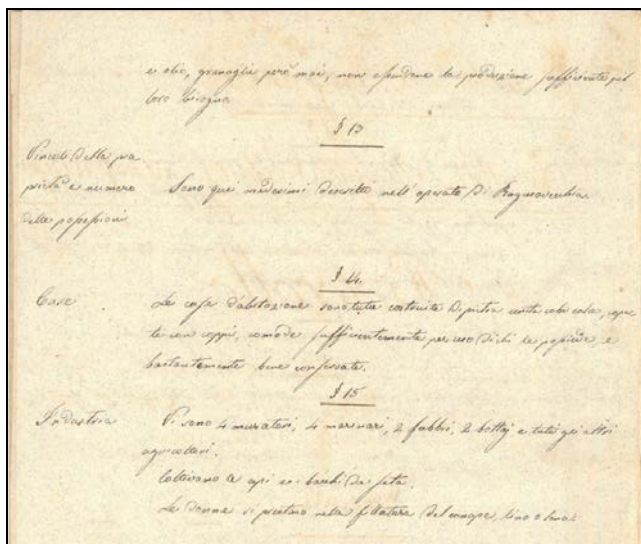


Figure 5. Excerpt from the *Operato catastale di comune Čilipi*

Source: HR – DAST – 152, Archive of Maps for Istria and Dalmatia (AMID), box 99, *Operato di comune Čilipi*.

143. HR – DAST – 152, Archive of Maps for Istria and Dalmatia (AMID), box 72, *Operato di comune Brotnice*; box 82, *Operato di comune Cavtat sa Zvekovicom*; box 99, *Operato di comune Čilipi*; box 134, *Operato di comune Drogenik*; box 138, *Operato di comune Duba Konavoska*; box 149, *Operato di comune Dunave*; box 157, *Operato di comune Đurinići*; box 163, *Operato di comune Gabrili*; box 191, *Operato di comune Gruda*; box 211, *Operato di comune Jasenice*; box 255, *Operato di comune Komaji*; box 299, *Operato di comune Kuna Konavoska*; box 319, *Operato di comune Lovorno*; box 332, *Operato di comune Ljuta*; box 349, *Operato di comune Mihanići s Drogenikom*; box 357, *Operato di comune Močići*; box 370, *Operato di comune Mrcine, danas Dubravka*; box 429, *Operato di comune Palje Brdo*; box 449, *Operato di comune Pločice*; box 474, *Operato di comune Poljice*; box 477, *Operato di comune Popovići*; box 496, *Operato di comune Pridvorje*; box 523, *Operato di comune Radovčići*; box 561, *Operato di comune Siljeski*; box 603, *Operato di comune Stravča*; box 675, *Operato di comune Uskoplje*; box 703, *Operato di comune Vitaljina*; box 705, *Operato di comune Vodovađa*; box 735, *Operato di comune Zastolje*.

144. Zrinka Režić Tolj, “Svilarstvo u Konavlima: oživljavanje jedne tradicije // Sericulture in Konavle: A Tradition’s Revival,” *Etnološka tribina* 30/37 (2007): 110. This was confirmed by Mare Drobac in an interview conducted at her home in Grušići, Konavle, in September 2016 (during the research for the presentation on the Mediterranean Island Conference, September 21-24, 2016, on the island of Vis. More in: Marija Gjurašić and Anja Vlašić, “The Tradition of Sericulture on the Territory of Croatia through the Ages, on the Example of Konavle // Tradicija svilarstva na hrvatskim prostorima kroz prošlost: Primjer Konavala,” in *Mediterranean Island Conference*, ed. Ljiljana Kaliterna Lipovčan, Rino Medić, and Ozana Ramljak (Zagreb: Institut društvenih znanosti Ivo Pilar, 2016), 48-49.

Girls produced their own silk and used it to sew, embroider, and weave their traditional costumes – a vital part of Konavle's identity. They would prepare various garments for all life situations, especially the decorative *poprsnica*, but they did so only until they were married. They dyed silk with natural dyes.¹⁴⁵ Based on the description provided by Režić Tolj, the rearing of silkworms lasts all year round. It begins with several months of ensuring the right conditions for their tiny eggs, which are stored in a white linen bag throughout the year (once in a cooler room in the house, and nowadays even in the freezer) in order to prevent unwanted and premature hatching of the larvae.¹⁴⁶ The rearing process usually begins around Easter, that is, at the time when young leaves begin to sprout on mulberry trees, which the silkworm feeds on. The long-stored eggs are then taken to the church to be blessed (on Good Friday or on Easter Sunday), along with chicken eggs and other food products.¹⁴⁷ After the blessing, the women from Konavle (both in the past and today) heat the eggs in the traditional way: they put some of them in a small white canvas bag, which they store close to the heart – in their bosom, which serves as a natural incubator.¹⁴⁸

Due to such an intimate rapport between the silkwoman and the silkworm, the girls no longer produced silk after marriage, but they passed on their prowess to the next generations – to their daughters and granddaughters. Even so, silk threads accompanied the men and women of Konavle from birth to death, and not only as a part of their costumes. In fact, the umbilical cord of a newborn used

145. Benić Penava, "Rasadnik Čibača (1911-1932)": 534.

146. Režić Tolj, "Svilarstvo u Konavlima: oživljavanje jedne tradicije // Sericulture in Konavle: A Tradition's Revival," 2007, 101. This was confirmed by Mare Drobac in an interview conducted in September 2016 at her home in Grušići, Konavle.

147. Režić Tolj, "Svilarstvo u Konavlima: oživljavanje jedne tradicije // Sericulture in Konavle: A Tradition's Revival," 2007, 101. This was confirmed by Mare Drobac in an interview conducted in September 2016 at her home in Grušići, Konavle. See also: A.A. "Blagoslov svilenih buba," in *Rimski Obrednik izdan po naredbi pape Pavla V. i pregledan brižljivošću drugih papa a oblašću Svetoga G. N. pape Pija XI., udešen prema Zborniku Kanonskog prava. Po tipskom izdanju rimskom.* (Zagreb, 1929), 509 (Blessing No. 63).

148. At an average body temperature of about 36.5°C, the larvae usually develop from eggs in two (Hansal) to three (Slovak) days, or according to Benc-Bošković, in 4-5 days at most, while in the conditions of industrial production, the larvae develop in 10-15 days at a temperature of 15-20°C. Cf. Režić Tolj, "Svilarstvo u Konavlima: oživljavanje jedne tradicije // Sericulture in Konavle: A Tradition's Revival," 2007, 101-102 (according to a testimony of the silkwoman Mare Slovak); Jany Hansal, "Priča o svili. Bi li ti sinko meni mogla dobiti bubicu?" Deša Pamphlet – Dubrovnik, available on: <https://desa-dubrovnik.hr/projekti/razvojni-projekti/put-do-svile-bi-li-ti-sinko-meni-mogla-dobiti-bubicu/>. [Accessed 8 July 2022]; Katica Benc-Bošković, *Konavle – tekstilno rukotvorstvo i narodna nošnja* (Zagreb, 1983): 30-31.

to be tied with silk, as well as the hands and feet of the deceased "so that they would not return to this world".¹⁴⁹

Some of the women from Dubrovnik, who in the 1830s and 1840s were involved in silk manufacturing, attended a course in Zadar, in the silk mill owned by Horacije Pinelli.¹⁵⁰

At the beginning of 1851, Nikola Amerling from Dubrovnik submitted a request for the establishment of a silk mill on the island of Mljet, but, for undetermined reasons, he quickly gave up on his plan.¹⁵¹ Nevertheless, silkmaking did take hold on the island of Mljet as a domestic craft.

The eminent Jewish family of David-Elija Morpurgo (1809-1882), the father of Vid Morpurgo, was engaged in silk production in Split. David-Elija Morpurgo was the founder and the first owner of the oldest bookstore in Split. He initially sold books, especially textbooks, which he printed in Venice, but he eventually switched to silk production and the sale of textile.¹⁵² He took part in the great Dalmatian-Croatian-Slavonian Economic Exhibition held in Zagreb in 1864, where he received an award for his products.¹⁵³

The largest number of silk mills in Dalmatia were located in the Bay of Kotor (which at the time was one of its constituents). In 1834, there were seven silk-spinning mills in Kotor and six in Herceg Novi. According to Zdenčaj's description of the Bay of Kotor from 1838, "Silk works well, and this product could multiply far more if lower-ranking women, now preoccupied with men's affairs, spent more time on this useful and natural duty of theirs."¹⁵⁴ Silk production experienced a significant surge in the mid-19th century. At that time, the Chairmanship of the Agricultural Society in Zadar was in charge of promoting and supplying mulberry trees to the local population.¹⁵⁵ Two more mills were opened in Prčanj in 1840/41 (one owned by the Sbutega brothers, and the other owned by the Milin

149. Mare Drobac, in an interview conducted in September 2016 at her home in Grušići, Konavle.

150. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 186.

151. Ibid, 121 (according to: HAZd, *Protokol Registrature za 1851.*, No. 565).

152. Damir Pilić, "Posljednji dani najstarije knjižare na svijetu. Stvar je prokletno tužna i bizarna, kako je moguće da se gasi knjižara koja je dobila knjigu o sebi!?" *Jutarnji list* on June 12, 2017).

153. Ibid, 174.

154. Alexander Zdenčaj, "Kratko opisanje Boke Kotorske. (Iz Gerlice Cernogorske)," *Danica Ilirska* 4/37, ed. Ljudevit Gaj (1838): 145-147.

155. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 424.

brothers);¹⁵⁶ therefore, the Bay produced almost half of the total Dalmatian silk in 1844.¹⁵⁷

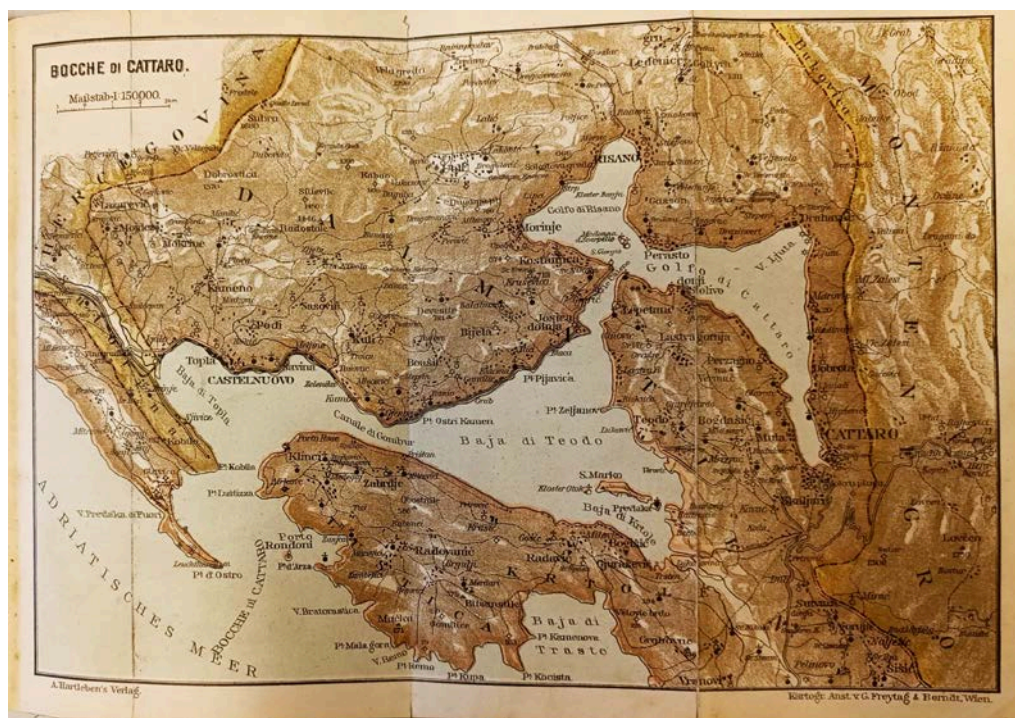


Figure 6. Map of The Bay of Kotor (Bocche di Cattaro)

Source: *Illustrierter Führer durch Dalmatien (Abbazia – Lussinpicollo) längs der Küste von Albanien bis KORFU und nach den Ionischen Inseln. Fünfte Auflage.* Vienna and Leipzig, 1902, between pp. 124-125.

Since the Catholic Church owned large amounts of land, it also encouraged the planting of mulberry trees.¹⁵⁸ There was a sudden surge of interest in this activity in 1855. The fact that in the same year eleven families (their residence is not recorded) ordered a total of 1,590 seedlings at a price of 159 forints confirms

156. Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 1982, 119-120. According to Kolar, the latter two (in Prčanj) were opened in 1860. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 186.

157. Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 111 and 115. The name of Dobroslava, a silk spinner from Kotor, was recorded in the *Knjiga Uprave grada Kotora* on 17 October 1333. Cf. Aleksandra Mirković, "Pravni i ekonomski položaj žena u srednjovekovnim gradovima na Primorju, sa akcentom na Kotoru i Dubrovniku, iz ugla istorije porodice," note 43, according to: Risto Kovijanić, *Kotorski medaljoni* (Belgrade, 1980), 117. Available on the website of Montenegrina: Digital Library of Montenegrin Culture – Anthropology, http://www.montenegrina.net/pages/pages1/antropologija/položaj_zena_u_srednjovekovnom_kotoru_i_dubrovniku_a_mirkovic.html. [Accessed 18 March 2022.]

158. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 424.

as much.¹⁵⁹ Due to the expressed interest, investments were made to train manufacturers who were intensively involved in silkworm breeding. The Agricultural Society proposed the purchase of twenty professional books on silk production, which were then distributed in the villages of the Zadar County.¹⁶⁰ Because of the investments in this industry, the state started to keep precise records on the number and category of the ordered seedlings in 1857. According to these data, all seedlings were imported from Lombardy.¹⁶¹ The number of trees in Dalmatia grew from 800,000 trees in 1838 to almost three million trees by the beginning of World War I.¹⁶²

The mulberry silkworm disease, which ravaged Lombardy in 1855 and spread throughout Europe, gave an impetus to Dalmatia to plant more trees. In fact, most mulberry trees in Dalmatia were planted between 1854 and 1864, when silkworm breeding in Italy and Western Europe was affected by the disease.¹⁶³ The crisis increased the earnings of Dalmatian silk craftsmen, especially in the Zadar area and in Skradin.¹⁶⁴ The production reached its peak in 1860, after which it began to decrease drastically. The reason for this lies in the spread of the disease among Dalmatian mulberry trees as well, which, fortunately, did not last long, but the production never came even close to the quantities obtained around 1860. With the recovery of the Italian silk production, silk production in Dalmatia began to rapidly decline after 1865, as strong Italian competition led to a significant drop in the price of cocoons. An additional negative factor that contributed to the fall of silk production in Dalmatia, and which can be compared to the situation in northern Croatia, was the purchase price of cocoons. The local silk-processing monopoly holders in both provinces continuously manipulated the prices of cocoons, which ultimately led to the breeders losing confidence in them. After that, silk stations (*stazioni sericole* / *stazioni bacologiche*) were established in all the cities. They were equipped with a thermometer, a microscope, and other tools, and their task was to control the production process (especially the quality of eggs and cocoons). As a result, silk production briefly recovered.¹⁶⁵ The manager of the Split station was Petar Tartaglia, while the Dubrovnik station, which was founded in 1871 (the same year as the Rab, Hvar, Skradin, and Kotor stations), was run by the nobleman Frano Gučetić Gondola (1833-1899).¹⁶⁶ The

159. Ibid, 425.

160. Ibid, 426.

161. Ibid, 425 and 427.

162. Peričić, "Svilarstvo Dalmacije u XIX. stoljeću," 1982, 110.

163. Ibid, 109.

164. Čavić, "Svilarstvo Zadarskog okružja u razdoblju od 1852. do 1860. godine," 2010, 431.

165. Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 1982, 125-126.

166. *Manuale del Regno di Dalmazia per l'anno*, vol. III (1873), 324; vol. IV (1874), 307; vol. V (1875), 291; Kolar, *Svilarstvo u Hrvatskoj*, 2007, 174; Š. Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 1982, 125.

Dubrovnik station was probably located in Gruž (*Gravosa*), near the Gučetić-Gondolin palace. The Agricultural School (Poljodjelski zavod / Poljodjelska učiona) was founded at the same location at the end of the 19th century (1887), and it introduced silkmaking as one of its subjects.¹⁶⁷

As part of it, the following was studied: "Silkworm breeding. Preparation and nutrition of seeds. Boiling of larvae. Silkwork diseases."¹⁶⁸ A room (silk house)¹⁶⁹ was designated for the cultivation of silkworms, which could be heated and ventilated, and which contained one cabinet for the laying of silkworm seeds and another for growing silkworms in the earliest age.¹⁷⁰ In the first school year (1887), the students received 15 g of seeds for cultivation, which, as the Report points out, was "even too much for these circumstances, because there are not enough mulberries," and the value at the end of the year was 97 florin and 63 small coins.¹⁷¹ According to the data from the *Annual Report on the Agricultural Institute* from 1888, a small amount of silkworms was grown that spring, with which the students could practice breeding bugs, boiling the cocoons, and rational handling in obtaining silkworm seeds.¹⁷²

167. According to the data from the *First Annual Report on the Agricultural Institute*, the work of the school was supervised by a supervisory board (*skrbništvo*), whose president was Baron Frano Gondola, while its members included Dr Ljudevit Marotti, lawyer and secretary of the municipality of Dubrovnik, representative of the state; Manojlo Nikolić, high-school teacher, representative of the Provincial School Council; Dr Pero Čingrija, lawyer, member of the Provincial Diet, and representative of the Provincial Committee; Dr Marin pl. Gjorgji, lawyer and representative of the Provincial Committee; Dr Ivo Rubricius, medical doctor and representative of the Agricultural Society in Dubrovnik, and Baldo Bassegli-Gozze, landlord and representative of the Agricultural Society in Dubrovnik. The headmaster was Fran Jergović, who taught chemistry as well as the structure and cultivation of the soil, and there were two more members of the teaching staff: Dragutin pl. Hreljanović, bailiff and teacher who taught metrology, reading and writing, natural sciences, botany, sericulture, and mechanical engineering, and Stjepan Bulić, a practical teacher who taught arithmetics, fruit growing, and olive growing, and also managed the workshops in the institute's garden. The Report does not specify who taught the rest of the school subjects (viticulture; agricultural crafts; cattle breeding; animal husbandry; beekeeping and fishing; breeding of poultry and rabbits; planning and administration of small estates; simple bookkeeping, and forestry). One of the students and participants in the training was Frano Supilo from Cavtat, who received an annual grant of 180 florins for two years in a row and graduated with excellent grades and a distinction. *Prvo godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1887* (Dubrovnik: Naklada Poljodjelskoga zavoda u Gružu. Tipografija D. Pretnera, 1887), 25 and 35; *Godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1888* (Dubrovnik: Naklada Poljodjelskoga zavoda u Gružu. Tipografija D. Pretnera, 1888), 38.

168. *Prvo godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1887*, 22.

169. *Godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1888*, 36.

170. *Prvo godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1887*, 32.

171. *Ibid.*, 32-33.

172. *Godišnje izvješće o Poljodjelskom zavodu u Gružu za školsku godinu 1888*, 36.

In 1906, the Society for Domestic Crafts established the Committee for the Renewal of Silk Production, and the Rosa family placed at their disposal the old machines of their already closed silk mill.¹⁷³ However, all this was not enough to sustain silk production in Dalmatia. It was, in fact, struck by a fate similar to that of silk production in the continental part of Croatia, where almost all silk mills were discontinued. As a result, the silk stations too lost their purpose at the beginning of World War I.¹⁷⁴

The increased interest in silkworm breeding in the Dubrovnik district during the 1920s is evident from the amount of eggs distributed free of charge by the Central Sericulture Administration, which was located in Novi Sad during the Kingdom of SHS.¹⁷⁵ Thus, 70 g of eggs were distributed in 1920, 360 g in 1924, 450 g in 1926, and as much as 5,500 g of eggs in 1929.¹⁷⁶ However, it should be mentioned that things did not always go smoothly, so that in 1919, for example, five ounces of seeds were delivered too late and nothing could be saved (the butterflies hatched during transport).¹⁷⁷

The great interest in silkworm breeding in the area of Dubrovnik is also evident from the number of breeders: in 1923, a total of 195 were recorded,¹⁷⁸ and in 1924, there were 101, of which as many as 97 lived in Konavle.¹⁷⁹ It should be

173. Peričić, "Svilarstvo Dalmacije u 19. stoljeću," 1982, 116.

174. Ibid, 123-126.

175. Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 534-535.

176. Ibid, 534.

177. This information is mentioned in reports for 1923. See State Archive in Dubrovnik, collection *Grand Prefect of the Dubrovnik District (Veliki župan Dubrovačke Oblasti, hereafter: DO)*, box 54, docs. 1924, Agriculture, no. 11-20 (folder no. 13 – *Silkwork and Mulberries*). Report of the Grand Prefect (no. 2147 / 171 Agriculture). Data on silkworm breeding in 1923. Dubrovnik, February 24, 1923; Report of the Grand Prefect (no. 1247 / Agriculture). Data on silkworm breeding in 1923, Dubrovnik, March 18, 1924 (dispatched on March 19, 1923). Note: referring to the same source from 1923, Benić Penava presumed that this, too, happened in 1923. Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 535.

178. According to the aforementioned Report from March 1923, 1,985 kg of raw silk cocoons were produced that year (DO, box 54, Report of the Grand Prefect (no. 1247 / Agriculture). Data on silkworm breeding in 1923, Dubrovnik, March 18, 1924). In an earlier report, dated February 24, 1923, it is stated that there were 185 breeders at the time and that 1875 kg of raw silk cocoons had been produced (DO, box 54, Report of the Grand Prefect (no. 2147 / 171 Agriculture). The latter document is also cited in Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 535.

179. For the purpose of easier distribution, seeds for 26 breeders (72 g) were handed over to the head of the village of Mrcin (Konavle); for 21 breeders (72 g) to the parish office of Pridvorje (Konavle); for 19 breeders (72 g) to the parish office of Čilipi (Konavle); for 18 breeders (50 g) to the parish office of Stravča (Konavle); for 13 breeders (72 g) to the school administration of Močići (Konavle); to Mara Kostenica on the island of Lopud (10 g); to widow Ana Tengjer from Dubrovnik (4 g); to Jela Hoffmann-Dorotka from Dubrovnik (4 g) and to Jozica Nonveiller from Dubrovnik (4 g). (DO, box 54, folder no. 13, Statement of

mentioned that in 1924, the Municipality of Metković requested that, for the purpose of sericulture, the Grand Prefect of the Dubrovnik District allocate 1,000 mulberry trees from the state nursery in Čibača for free, to be planted along public roads.¹⁸⁰ At the same time, there was no such initiative in other parts of Croatia.¹⁸¹ In the 1930s, sericulture in the Dubrovnik area was confined mainly to the Konavle area.¹⁸² The production in Konavle persisted until the 1960s, when tourism, as a possibility to earn money much faster and easier, completely suppressed it.



Figure 7. Postcard *Konavoska narodna nošnja. Costumes nationaux de Canale*
 Publisher: Jovan Tošović, Dubrovnik, around 1924.

We are nowadays more or less reminded of the intensive silk industry in 19th-century Croatia only through toponyms (as well as through several anthroponyms

the District Office in Dubrovnik on the distribution of silkworm seeds (no. 5902/438). Dubrovnik, May 31, 1924). The State Silk Industry Administration demanded that the grown cocoons obtained from the distributed seeds be offered for purchase to the State Silk Industry Supervision in Imotski, and those breeders who failed to respond to the call were forced to pay the value of the obtained seeds and the underlying paper. Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 535.

180. DO, box 54, folder no. 13, Letter to the Grand Prefect (no. 3170/24), request of the Municipal Administration of Metković on the distribution of mulberries free of charge. Metković, November 28, 1924.

181. Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 536.

182. Sericulture on the island of Lopud was discontinued in the late 1920s due to a disease that killed all silkworms there. Benić Penava, "Rasadnik Čibača (1911-1932)," 2017, 534-535.

and patronymics) associated with silk, mulberry trees, or mulberries.¹⁸³ However, after a period when it was merely a cottage industry, practiced in the homes of farm girls of Slavonia, Petrinja, and Konavle, who used the silk threads produced in their households to embroider their costumes, silk production is making its comeback. After the Croatian War of Independence, silk production in Konavle was revitalized as a cottage industry, primarily thanks to the activities of the NGO "DEŠA" – Regional Centre for Community Building and Civil Society Development.¹⁸⁴ What is more, silk production has been introduced as an elective subject at the Gruda Elementary School, and both boys and girls are free to attend it. It should be mentioned that DEŠA's activities also included the restoration of the folk costume of the island of Mljet, which also uses silk threads.¹⁸⁵

183. For example, Svilno near Grobnik, Svilaj near Brod, Svilna near Pleternica, Sviloš near Ilok, Svilaja, Svioke, Murvenica, Murvinjak, and the like (toponyms); Svilan, Svilanka (anthroponyms); Svilan, Svilanović, Svilar, Svilarić, Sviličić, and the like (patronymics). Cf. Kolar, *Svilarstvo u Hrvatskoj*, 2007, 17; Martina Bašić, "The Toponymy of Crikvenica," *Folia onomastica croatica* 18 (2009): 36; Domagoj Vidović, "Pregled toponimije jugozapadnoga dijela Popova. // An Overview of the Toponymy of Southwestern Popovo," *Folia onomastica croatica* 19 (2010): 318; Nikola Vuletić, "Bilješke iz rapske povijesne toponimije: toponimi bez suvremenih potvrda," *Folia onomastica croatica* 29 (2020): 250.

184. The revitalization began in 1994 through the aforementioned organization, whereby the silk cooperative SERICA from Cevennes in France sent a donation of mulberry silk eggs (11 grams) to Konavle, which were then distributed to the interested families. As part of the project *Obnova svilarstva u Konavlima (Renewal of Silk Production in Konavle)*, in 1996 DEŠA secured the funds needed to purchase 2,000 seedlings of the dwarf mulberry tree *Kokuso* thanks to the editorial board of Kolo sreće – The Wheel of Fortune (an entertainment show on Croatian Radio and Television – HRT) and several other sponsors. In cooperation with the Croatian Radio and Television's Editorial Board of Folk Music and Traditions (Redakcija narodne glazbe i običaja), in 1997 DEŠA participated in filming a documentary about the mulberry silkworm and the production of silk in Konavle ("Kad list murve bude poput mišjeg uha") in order to promote and revitalize the silk industry. By the decision of the Ministry of Culture of the Republic of Croatia, the Konavle embroidery became a part of the Croatian Intangible Cultural Heritage in July 2015.

185. Hansal, "Priča o svili. Bi li ti sinko meni mogla dobiti bubicu?"



Figure 8. *Mare Drobac, a silkwoman from the village of Grušići, by Čilipi in Konavle*

Note: Photo taken in her family house, in 2016, during the research for the presentation M. Gjurašić and A. Vlašić, "The Tradition of Sericulture on the Territory of Croatia through the Ages, on the Example of Konavle," on the Mediterranean Island Conference, September 21-24, 2016, on the island of Vis.

Conclusion

This paper summarizes the history of silk craftsmanship and sericulture, with a special emphasis on the Kingdom of Croatia-Slavonia and the Kingdom of Dalmatia during the long 19th century. The research focused on the influence that the local and state authorities had on the development of this industry in both provinces.

The impetus for the development of sericulture came from Empress Maria Theresa, who wanted the nobility at the Viennese court to be dressed as lavishly as those in France and Germany, and at the same time to reduce the costs of importing this expensive fabric. In addition, silkmaking was recognized as a lucrative sideline activity, which was not subject to adverse weather conditions like many other economy branches and could be practiced even by the lowest strata of society, which would resolve the problem of vagabondry and begardry in the Monarchy.

In the area of present-day Croatia, sericulture was first encouraged in the free port of Rijeka (1750), and then in the Military Frontier, where numerous

household cooperatives, especially frontiersmen's families, got involved with it. Sericulture soon spread to the Slavonian (1761), Varaždin (1764), and Banal Frontiers (1772) as well as to Kordun (1787), and eventually it reached Dalmatia, which came under Austrian rule only after the fall of the Venetian Republic.

It has been determined that the rulers, from the time of Empress Maria Theresa until the end of the Austrian administration in the Croatian lands (in both provinces), encouraged sericulture and silk craftsmanship more than any other industry. This was manifested through the free distribution of mulberry seedlings and mulberry silkworm eggs, production control done by supervisors employed in silk stations, distribution of manuals in Croatian on silkworm breeding, organization of free courses for the locals who wanted to engage in this activity, organized purchase of cocoons, and so on. Apart from the state, sericulture was also supported by the Catholic Church, which owned great estates, especially in Dalmatia, where it encouraged the planting of mulberries.

However, due to the undercutting of purchase prices by the monopoly holders (in both provinces), the strong competition – primarily from Italy and France – the political circumstances (the turmoil in 1910, the Balkan Wars, World War I), and especially the invention of artificial silk, this industry started to dwindle in Croatia by the end of the Austrian administration. Today, only a few toponyms, anthroponyms, and patronymics that contain references to silk, mulberry trees, or mulberries remind us of its "golden age." As a cottage industry, silk production has persisted only in the vicinity of Petrinja, in some Slavonian villages, and in Konavle, where farm girls still make traditional costumes out of silk that they produce themselves. Silk production was revitalized in Konavle after the Croatian War of Independence, thanks to the NGO "DEŠA", and it has been introduced as an elective subject at the Gruda Elementary School (in Konavle), which further encourages the development of silk production in the region.

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