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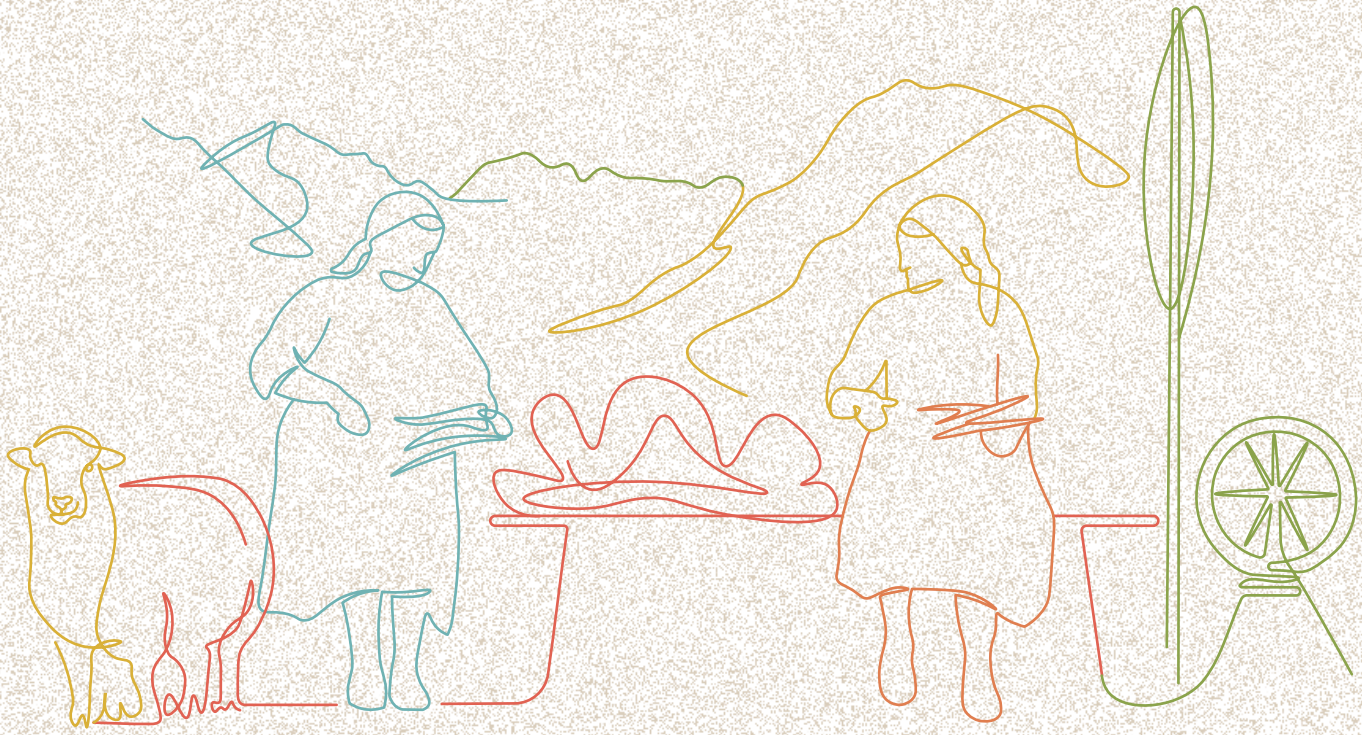
Alpine Space

AlpTextyles

ALPINE TEXTILE HERITAGE

AN OVERVIEW

Resources turned into waste? From the past to the future of wool, flax, and silk in the Alps



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ALPINE TEXTILE HERITAGE: AN OVERVIEW
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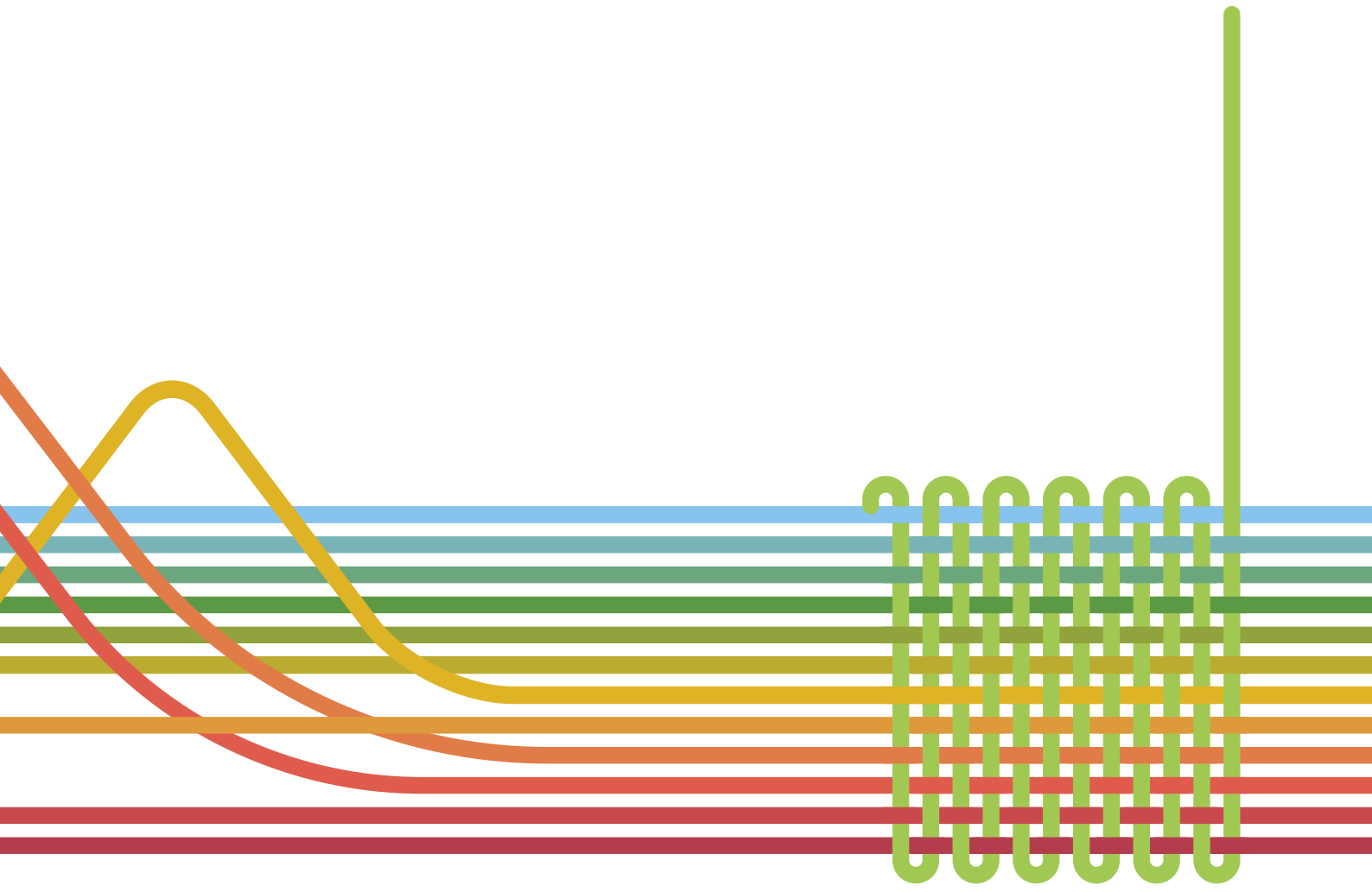
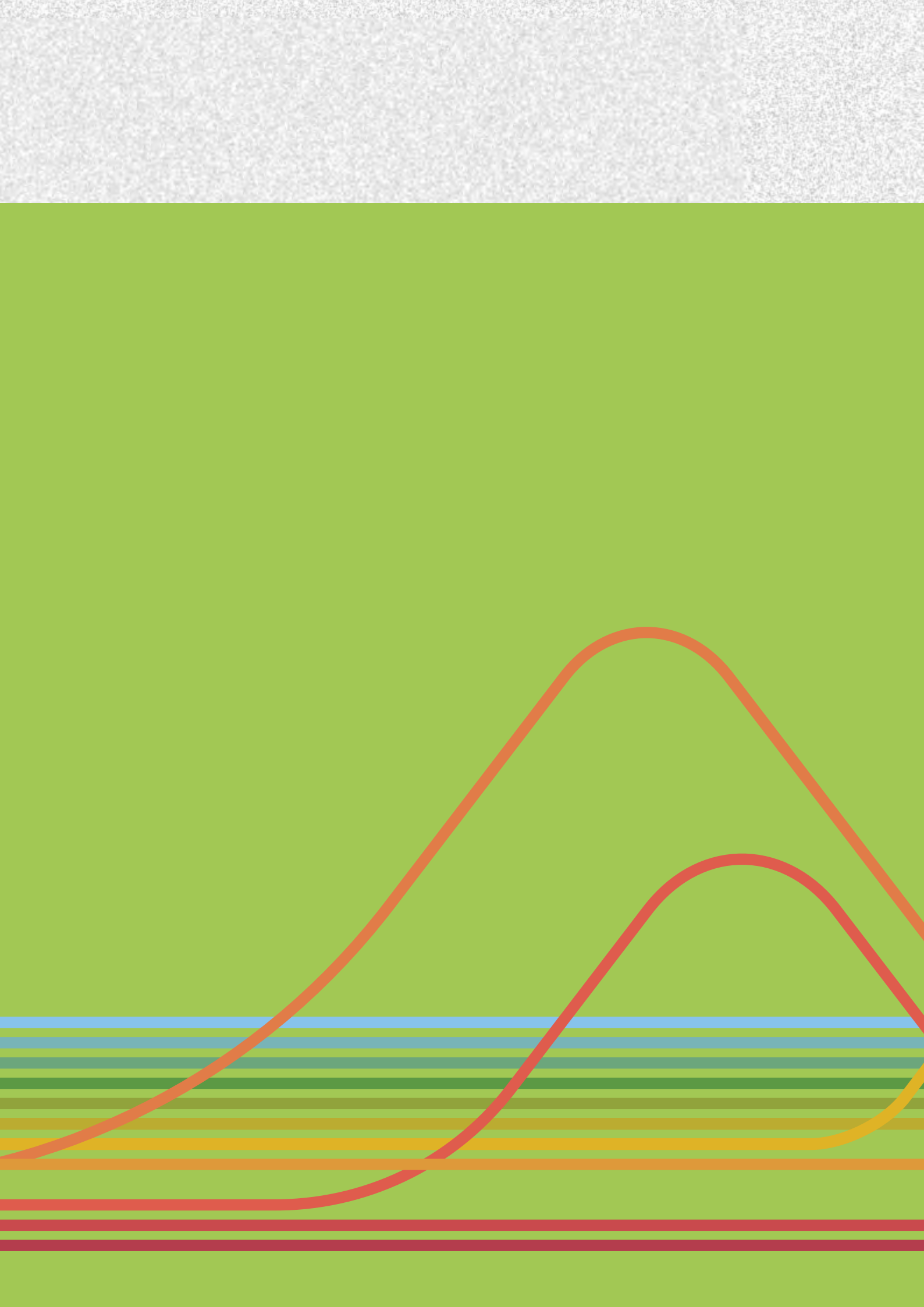




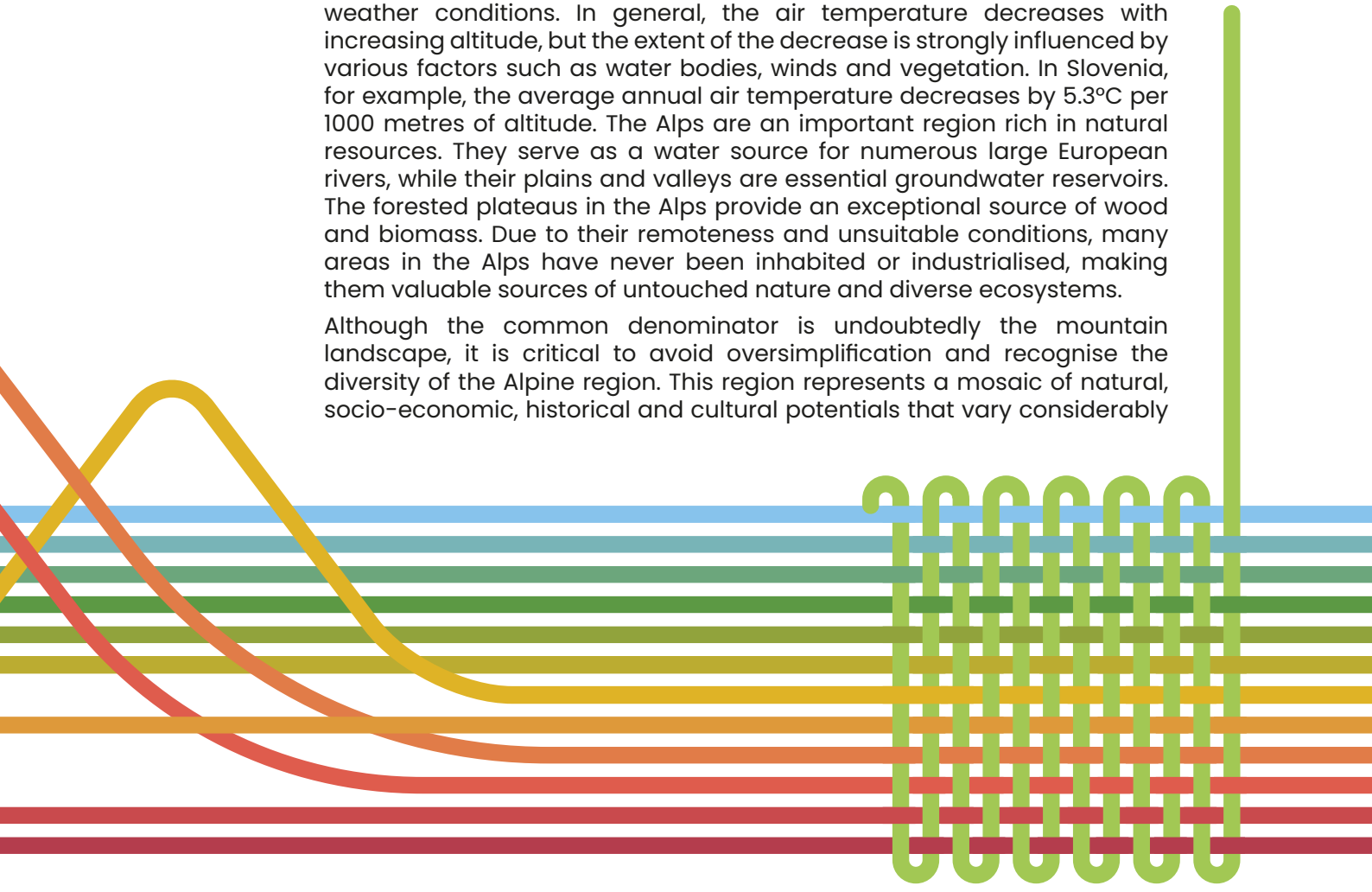
Introduction

KATARINA ŠRIMPF
VENDRAMIN &
ERIK LOGAR

Many definitions, including EUSALP, INTERREG and the Alpine Convention, each encompassing distinct territories, characterise the Alpine Space. The INTERREG Alpine Space covers the entire territory of Austria, Slovenia, Liechtenstein and Switzerland. It also includes areas in southern Germany (Bavaria and Baden-Württemberg), south-east France (Bourgogne-Franche-Comté, Auvergne-Rhône-Alpes, Provence-Alpes-Côte d'Azur, Grand Est) and northern Italy (Lombardy, Friuli-Venezia Giulia, Veneto, Autonomous Province of Trento, Autonomous Province of Bolzano, Valle d'Aosta, Piedmont, Liguria). The Alpine region stretches from the Mediterranean coast of the Côte d'Azur in the west to the western foothills of the Pannonian Plain in the east and from the northern edge of the Po Valley in the south to Lake Constance and the city of Munich in the north. The INTERREG Alpine region covers an area of 450,000 km2 and is home to over 80 million people. This is where the influences of Germanic, Romance and Slavic languages and cultures meet.

The Alps are known for their dynamic weather patterns and the major challenges posed by climate change. The varied topography, the different altitudes in the various parts of the Alps, the distance from the sea and numerous microclimatic factors contribute to the typically changeable weather conditions. In general, the air temperature decreases with increasing altitude, but the extent of the decrease is strongly influenced by various factors such as water bodies, winds and vegetation. In Slovenia, for example, the average annual air temperature decreases by 5.3°C per 1000 metres of altitude. The Alps are an important region rich in natural resources. They serve as a water source for numerous large European rivers, while their plains and valleys are essential groundwater reservoirs. The forested plateaus in the Alps provide an exceptional source of wood and biomass. Due to their remoteness and unsuitable conditions, many areas in the Alps have never been inhabited or industrialised, making them valuable sources of untouched nature and diverse ecosystems.

Although the common denominator is undoubtedly the mountain landscape, it is critical to avoid oversimplification and recognise the diversity of the Alpine region. This region represents a mosaic of natural, socio-economic, historical and cultural potentials that vary considerably



from place to place. Cities, valleys and flat areas in the Alps contribute to this diverse fabric, each with unique characteristics and contributions to the overall Alpine context. Urban centres are hubs of cultural exchange, economic activity and innovation, while the valleys provide fertile soils for agriculture and traditional crafts. Conversely, the plains offer industrial development and networking opportunities within and beyond the Alpine region. Together, these different geographical features contribute to the rich picture of the Alpine region and characterise its socio-economic and cultural landscape.

The Alps' geographical features, such as topography, water systems, soil characteristics, climate variations, settlement patterns, and agricultural areas, contribute to the region's mosaic-like character. Each village, valley, and region in the Alps has its characteristics and forms a remarkable social, economic, and cultural space that evolves in response to its specific natural conditions and its integration into broader transregional and global networks.

The diverse landscapes of the Alpine region provide fertile ground for various economic activities, including textile production. The natural resources that form the basis for textile crafts and industries include forests, water and vegetation: wood plays a crucial role in the textile industry for the construction of looms, spindles and other tools needed for weaving and spinning; water was used in traditional textile crafts for washing, dyeing and fulling (a process for cleaning and starching woollen fabrics); a diverse flora that provided an abundance of plants suitable for natural dyeing. Local artisans used plants such as woad, madder, and dyer's chamomile to extract pigments and dye their textiles.

The traditional craft of textile production is deeply rooted in the region, with communities in different areas specialising in various aspects of the production process. In the mountain regions, sheep farming and wool production have been integral to the local economy for centuries. The untouched mountain meadows offer ideal grazing conditions, which result in high-quality wool fibres. These fibres are then processed into a wide range of textile products, including warm and durable clothing, blankets, carpets and traditional costumes. In plain areas such as the Po Valley, the climate and soil conditions are favourable for the cultivation of flax, a plant used for linen production. In these regions, the cultivation of flax and its processing into linen textiles has a long tradition. Experienced artisans use traditional techniques to spin and weave flax fibres to produce fine linen fabrics. These examples show how the natural resources and specific geographical features of the Alps contribute to the localisation of specific industries and the preservation of traditional craftsmanship. This interplay between natural features, cultural heritage and economic activities enriches the diverse image of the Alpine region and emphasises the importance of sustainable and locally rooted textile practices.

Examining the production, distribution and use of textiles reveals the diversity, specificity and interconnectedness of the Alpine regions. The textile sector provides a lens through which to examine the rich mix of traditions, knowledge and changes within the region's textile value chains. Research into textile production simultaneously encourages innovation, identifies business opportunities and addresses the challenges of adapting to climate change and broader environmental change.

Based on the specific natural and social resources in each area, such as wool, flax and natural dyes, the AlpTextyles project aims to shed light on the neglected but important discussion on textile value chains in the Alpine region. The project also addresses the growing consumer demand for CO2-neutral clothing and their willingness to support products from the Alps.

The AlpTextyles project represents an innovative approach to territorial cooperation in the Alps. Its objectives include initiating a relevant discourse on overlooked textile value chains, providing insights into consumer preferences for carbon-neutral clothing and products from the Alpine region, advocating cross-border cooperation and developing interdisciplinary recommendations for agricultural, industrial and cultural policies.

Through joint efforts, the AlpTextyles project partners will develop solutions to create sustainable, circular value chains for alpine textiles. These solutions will respect and integrate natural and cultural resources while considering consumers' desires for a low-carbon lifestyle. In addition, the project aims to improve cross-border cooperation and develop guidelines, toolkits and policy recommendations to support

innovations in the textile sector that respect cultural heritage and promote circularity.

This publication aims to unravel the rich tapestry of textile traditions, innovations and the intricate relationships between natural and social dynamics in the Alpine Space. It explores the rich history and complicated processes of textile production and offers a comprehensive exploration from raw material to finished fabric. The book is divided into five chapters and provides three levels of information: a general historical overview, period-specific outlines with selected highlights and detailed case studies showing the development of textile production in specific regions.

The first chapter provides a sweeping overview of the Alpine textile industry, tracing its roots from preindustrial crafts to contemporary innovations. It highlights the transformative impact of technological advances and economic changes on textile production and sets the stage for a deeper exploration of specific materials and techniques in subsequent chapters.

The second chapter focuses on wool, examining its historical significance and the process of converting raw fleece into fabric. It outlines the most important developments in different historical periods, enriched with case studies such as the flourishing wool trade in the Gandino Valley or the efforts to preserve autochthonous sheep breeds such as the Montafon stone or the Jezersko-solčava sheep.

Linen, one of the oldest textiles, is the focus of the third chapter. It explores the cultivation of flax, the labour-intensive production techniques and the role of linen in various alpine regions. Highlights include the linen industries in ancient Italy and mediaeval Germany, as well as case studies of the modern revival in regions such as the Alpine regions of Switzerland and Slovenia.

The fourth chapter unravels the history of silk, from its legendary origins in ancient China to its spread in the Alpine region and further accrose Europe. It highlights important historical periods such as the golden age of silk in the Tang Dynasty and the flourishing silk industry in the north of Italy. Case studies provide insights into how regions such as Lyon, France, became synonymous with the production of exquisite silk.

The final chapter focuses on the living heritage of textile craftsmanship in the Alpine region and emphasises the importance of preserving traditional techniques in the face of modern challenges. It discusses the role of heritage organisations, community initiatives and contemporary artisans in maintaining these traditions. Case studies from across the region illustrate how living heritage is being preserved, from the Pezzoto of Valtelina to traditional costumes in Italy, Austria and Slovenia.

This publication provides readers with a rich, multi-layered understanding of the Alpine textile industry's past and present and honours the skill and ingenuity that have shaped the region's textile crafts.

SOURCES:

Gleba, Margarita & Ulla Mannering. 2012. Textiles and Textile Production in Europe: From Prehistory to AD 400. https://www.jstor.org/stable/j.ctvh1djwg

Modica, Marcello. 2022. Alpine Industrial Landscapes. Springer Verlag. https://library.oapen.org/handle/20.500.12657/56978

Perko, Dragio & Milan Orožen Adamič (eds.). 1998. Slovenija – pokrajine in ljudje. Ljubljana.

Viazzo, Pier Paolo 1989: Uppaland Communities: Environment, Population and Social Structure in the Alps since the Sixteenth Century. Cambridge: Cambridge University Press.

https://www.alpine-space.eu/about-us/cooperation-area/

https://www.int-res.com/abstracts/cr/v20/n3/p253-257/

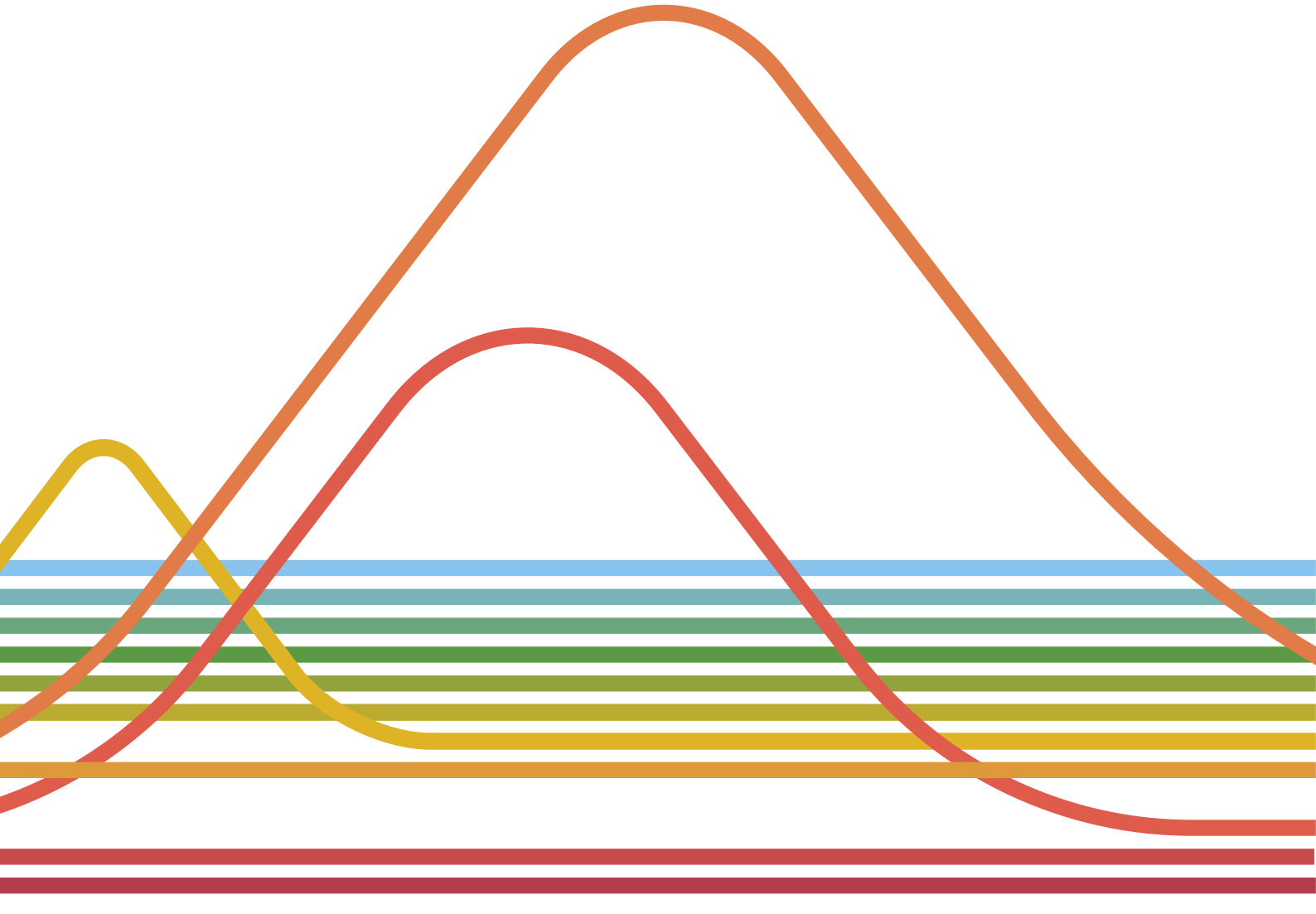
https://www.bukla.si/knjigarna/zgodovina/kulturna-zgodovina/klobcic-in-nit-stari-modni-hit.html

https://www.tzs.si/odrasli/prirocniki/vreme-in-podnebje-v-gorah

http://www.dlib.si/stream/urn:nbn:si:doc-qe3q62wi/18d554a1-6515-403b-8853-5de79734ac6b/pdf

https://isn2.zrc-sazu.si/sl/programi-in-projekti/skupne-resitve-za-dediscini-in-potrosniku-obcutljivih-trajnostnih-kroznih-in

https://www.oecd.org/env/cc/climatechangeintheeuropeanalpsadaptingwintertourismandnaturalhazardsmanagement.htm



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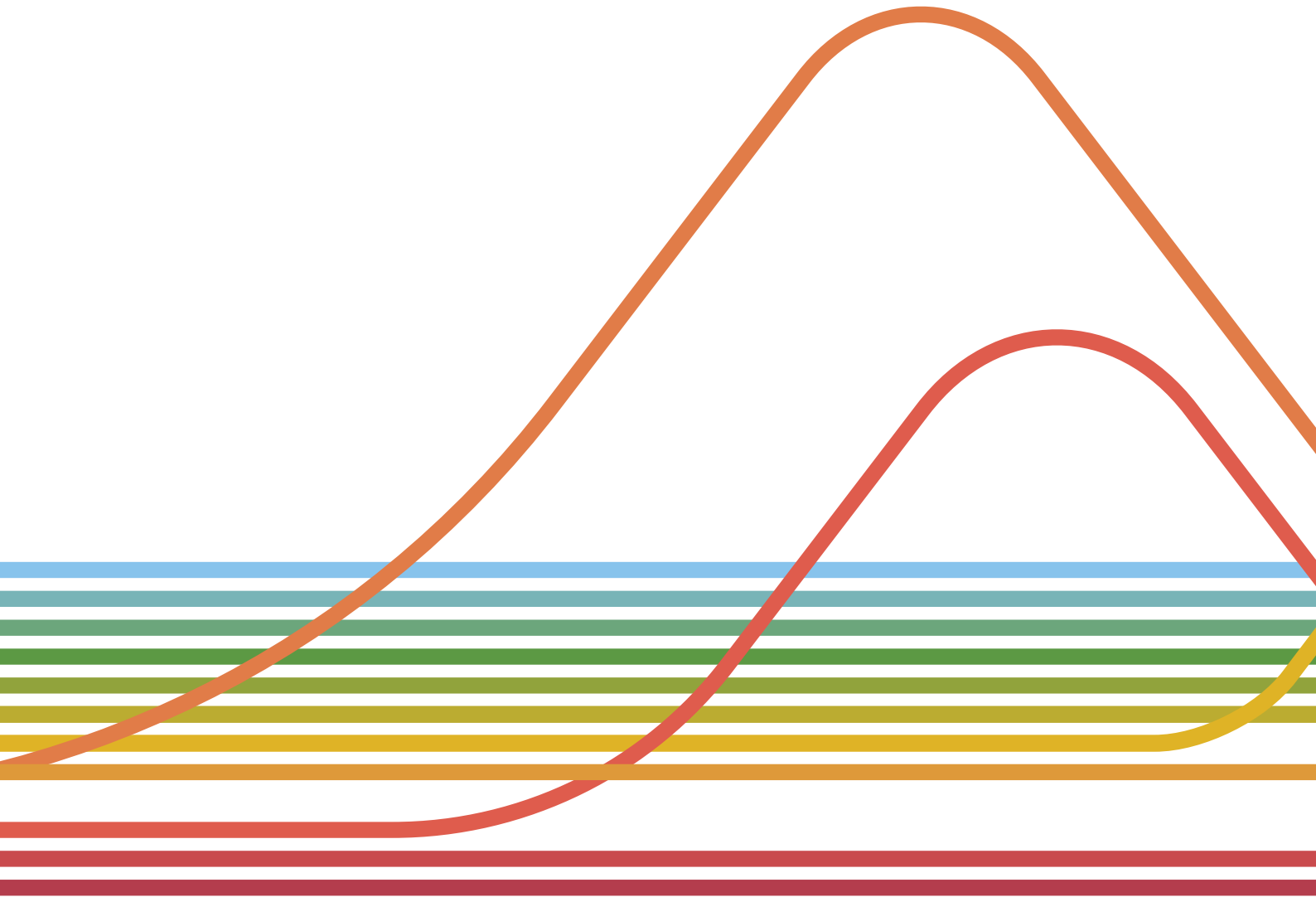
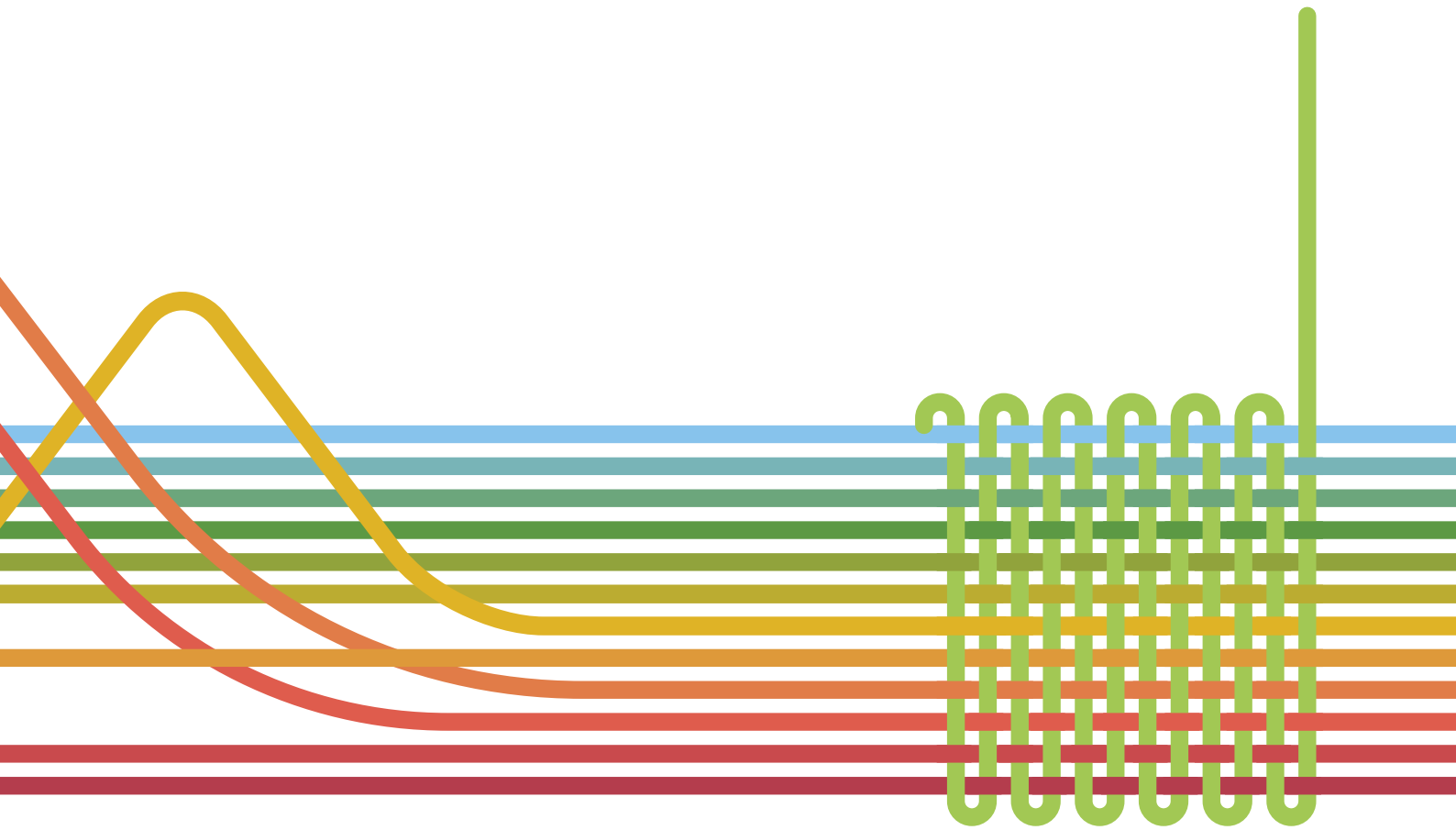




1. TEXTILE INDUSTRY IN THE ALPS

TATIANA BAJUK SENČAR
& ERIK LOGAR

The history of textile production in the Alps is intricately woven into the region's changing economic, social, and political landscape. This chapter embarks on a journey through time, exploring how the textile industry has varied across different historical periods, mirroring the broader changes in Alpine society.

Textile production in the Alpine regions has undergone a series of profound transformations from the agrarian era onwards. What began as a subsistence, family-based activity evolved into a highly mechanized and industrialized sector and, more recently, into a diversified, innovation-driven industry. These developments reflect broader changes in economic structures, from local barter systems to global trade networks. Social structures shifted from agrarian hierarchies to urban working classes to flexible, knowledge-based societies. Politically, the region has moved from feudal governance to state regulation and is now navigating the complexities of global integration and sustainable development.

Each era brought transformative changes that reshaped the landscape of textile production in the Alps. These changes are not just historical footnotes but are deeply interlaced with the region's socio-economic and political dynamics. Understanding these transformations offers valuable insights into the broader development patterns of the Alpine region.

The Alps comprise a mosaic of diverse natural, socio-economic, historical, and cultural potentials. Cities, valleys, and plains contribute uniquely to the region's intricate fabric. The economic structure of the Alps evolved from being predominantly agricultural to a vibrant combination of tourism, services, industry, electricity generation, and agriculture. In addition, the Alps have seen significant transformations in

Model of the development of the textile industry. Author: Erik Logar.

Viri:
Klemenčič, 2006, str. 167 -8;
Woods, 2011, str. 164 - 5;
Woods, 2005, str. 19;
Grabski-Kieron, 2014 b;
Mlinar, 2012, str. 19;
Klemenčič, 2003, str. 154-9;
Prager in sod., 2015, str. 126;
Potočnik Slavič, 2010, str. 25.

population and community structures, adapting to the changing economic landscape.

As we delve into the specificities of textile production in the Alps, we will see how these diverse elements have influenced the evolution of this vital industry. This chapter sets the stage for a detailed exploration of the key phases in the history of Alpine textile production, highlighting the complex interplay between local and global forces that have shaped its development.

1.1. TEXTILE PRODUCTION IN THE AGRARIAN ERA

During the agrarian era, which predates the 19th century, textile production in the Alpine regions was a fundamental part of daily life, deeply integrated into the agrarian economy. The process was characterized by simplicity, local resources, and communal effort, reflecting the socio-economic structures of the time. The primary resources for textile production during this period were natural fibers. The most common material was wool, sourced from sheep grazed in local pastures. Additionally, flax and hemp were cultivated to produce linen and other fabrics. Dyeing materials were locally sourced, with plants and minerals providing natural dyes. The diverse Alpine flora contributed to a variety of colors used in textiles.

Textile production was primarily a family affair, with all members contributing to the process. Women played a crucial role, often responsible for spinning, weaving, and sewing. The workforce extended beyond individual families to the community, fostering cooperation and shared labor. Textile production was often seasonal, aligning with the agricultural calendar, with winter months dedicated to textile work when farming activities decreased.

Textile production was organized as a cottage industry with decentralized, home-based operations. Each household produced textiles for its own use and local trade. Informal cooperatives or guilds existed in some regions, maintaining standards and sharing resources like spinning wheels or looms. This organization reflected the agrarian society's emphasis on self-sufficiency and community cooperation. All processes during the agrarian era were manual, relying on traditional techniques passed down through generations. Spinning involved drop spindles or spinning wheels, and weaving was performed on simple handlooms. The dyeing process involved boiling fibers with natural dyes, a skillful technique requiring extensive knowledge of local flora. The equipment used in textile production was basic and often homemade. Key tools included drop spindles, spinning wheels, handlooms, and carding combs for preparing wool. The most complex pieces of equipment were handlooms, often made of wood and operated by hand.

The market for textiles during this period was predominantly local. Textiles were traded within villages or neighboring areas, often in local markets or fairs. The barter system was integral to the local economy, with textiles frequently exchanged for other goods and services, reinforcing the self-sufficient nature of agrarian communities. Textile production provided a supplementary income for agrarian families, helping to diversify income sources and mitigate the risks associated with farming. It played a significant role in the social and cultural life of communities, with traditional garments worn during festivals, ceremonies, and daily life, reflecting local customs and identities.

The knowledge of textile production techniques, a valuable cultural asset, was passed down through generations, thus reinforcing family and community bonds. Activities such as spinning and weaving were often communal, with women gathering to work together, share news, and reinforce social ties. The ability to produce textiles contributed to the self-sufficiency of communities, reducing dependence on external markets.

Two women at work in the parlour: one at the spinning wheel, the other at the loom, about 1890. Source: Swiss National Museum.

Mother and daughter spinning in the "house", beginning of the 20th century. Source: Slovenski etnografski muzej.

In summary, textile production in the Alpine regions was an integral part of daily life during the agrarian era. It relied on natural resources, manual labor, and simple techniques organized around family and community structures. Textiles not only served as essential items of clothing and household use but also played a vital economic, social, and cultural role in sustaining agrarian societies. The simplicity and self-sufficiency of this period laid the groundwork for the more complex and industrialized textile production that would follow in later epochs.

1.2. INDUSTRIAL ERA: TEXTILE PRODUCTION IN THE ALPINE REGIONS IN 19TH CENTURY

The industrial era, which extends from the 19th century to the 1980s, marked a transformative period for textile production in the Alpine regions. Textile production was one of the first spheres of economic activity in the Alps affected by industrialisation, setting in motion a transition from traditional, home-based craftsmanship to mechanised, factory-based production. This brought about profound economic, social, and political changes.

The industrialisation of textile production in the Alps was characterised by the shift towards mechanisation. Water-powered mills, and later steam engines, replaced hand spinning and weaving, leading to significant increases in productivity and commercialisation. Spinning jennies, power looms, and other machinery revolutionized the industry, allowing for mass production of textiles. Mechanized spinning and weaving dramatically increased efficiency and output. Many textile mills and companies also later adopted vertical integration, controlling everything from raw material sourcing to finished product distribution.

The rise of centralized factories and a wage-based workforce were due to the confluence of key elements such as natural resources, primary materials, and labor providing the Alps with a locational advantage within the textile trade. Crucial to this advantage were the Alpine region's abundant water resources, which in specific locations could be harnessed for hydropower and provide the necessary energy for operating machinery.

Factories operated year-round, independent of agricultural cycles, significantly increasing the scale and efficiency of production. Substantial capital investments in machinery, infrastructure, and transportation, such as railways, facilitated large-scale production and distribution, integrating the Alpine textile industry into global trade networks. The workforce in the industrial era consisted of factory workers, including men, women, and children. The shift from home-based work to factories created a new class of industrial workers and led to urbanization, with people moving to towns and cities for employment. The demand for skilled labor to operate and maintain machinery led to the creation of specialized training programs and apprenticeships.

Industrialization brought about considerable social changes in the Alps. Traditional, rural ways of life were disrupted as people migrated from villages to factory towns and cities. The gap between industrial capitalists (factory owners) and workers widened, leading to new social dynamics and class struggles. Factory work often entailed harsh conditions and long hours, contributing to the emergence of labor movements advocating for better wages and working conditions. Nation-states implemented policies to support industrial growth, including tariffs, subsidies, and infrastructure development, reflecting the importance of the textile industry to national economies.

Natural fibers like wool, flax, and cotton remained essential, but cotton became increasingly important due to its versatility and the expansion of global trade routes. This period also saw an increase in imports of raw materials, especially cotton, from colonies and other parts of the world. This is how Switzerland became an important center of cotton textile production in continental Europe from the middle to the end of the 18th century onwards. Cotton was already being woven in 1380 in Basel and from the beginning of the 15th century onwards in Zurich. However, the boom began in Geneva in the 1690s, when Huguenot refugees from France set up the first manufacturing facilities. Geneva, which was not yet part of Switzerland, became one of the most important gateways to Europe for raw and spun cotton and finished fabrics.

The market for textiles expanded from local and regional boundaries to national and international markets, facilitated by improved transportation networks like railroads and steamships. The ability to produce textiles on a large scale allowed for the creation of affordable clothing and textiles for a broader consumer base. Companies began branding their products and engaging in marketing efforts to differentiate their goods in competitive markets.

Textile production became an important economic driver in the Alpine regions, contributing significantly to local and regional economies. The rise of the factory system brought significant social changes, including the development of industrial towns and a shift in social structures. The working class emerged as a distinct social group with its own culture and institutions. Factories often became the centers of community life, providing employment as well as social infrastructure, such as housing, schools, and hospitals for workers and their families. The need for continuous improvement in production processes spurred technological innovation and industrial research, laying the groundwork for future advancements.

Textile production became one of the cornerstones of the industrial economy in the Alps, driving urbanization and social change. The rise of factories and mechanized production processes increased efficiency and output, enabling the Alps to compete in national and international markets. However, their increasing prevalence also created numerous challenges and brought about significant socio-economic restructuring.

1.3. INDUSTRIALIZATION OF THE ALPINE TEXTILE INDUSTRY IN THE 20TH CENTURY

The 20th century heralded another era of dramatic change for the textile industry in the Alps. While the technological innovations that revolutionized textile production and manufacture in the 19th century continued to shape the industry, one of the driving forces shaping its evolution in the 20th century was the increasing expansion of these innovations and their effects on the textile industry on a global scale. In addition, the 20th century was marked by numerous crises (global wars, economic depressions) as well as the rise and fall of empires and nations, resulting in the reconfiguration of national borders and economic systems. Finally, the evolution of numerous other industries in the Alps also impacted the development and survival of textile production hubs. In addition, the gradual expansion of the industrialization of textile production beyond Europe profoundly affected production and value chains worldwide during the 20th century and the position of the alpine textile industry within it, shaping the rise (and decline) of alpine industrial textile production.

As described above, numerous locational advantages of the Alps facilitated the mechanization of textile production, and diverse additional factors determined the extent to which the industrialization of textile production was able to flourish. These factors also informed the uneven industrialization of the textile industry across Alpine regions (east-west), as well as different timelines for industrialization across countries. Certain analysts depict the Alps as following a path of 'dependent industrialization', as is the case for numerous mountain regions, in which numerous production factors necessary for industrial development – such as technologies, capital, human resources, accessibility, and transport – exist or are introduced from outside the region. In the 20th century, these external or exogenic factors played an increasing role in shaping the varied paths and timelines of textile industrial development in the Alps.

A view of the interior of the Novak knitting workshop, postcard, 1930's Source: Mestni muzej Radovljica.

Despite the variations and discrepancies among alpine regions regarding industrial development, the rise and fall of the industrialization of the alpine textile industry followed certain phases. The first half of the 20th century (1900-1960), which some refer to as the second wave of industrialization, was characterized by increased exploitation of alpine hydroelectric power, which helped upgrade the textile industry. In addition, due to technological advancements in energy transport, textile mills and other industrial buildings no longer needed to be built in the direct vicinity of hydropower plants located often in upper valleys and remote regions, facilitating the development of industrial hubs in outer areas or peri-alpine lowlands. This occurred mainly in regions with a successful convergence of numerous factors, including flows of investment capital, entrepreneurial skills, and local entrepreneurial initiatives (Savoie in France, Valais in Switzerland). Due to these factors, the second wave of industrialization manifested itself more strongly in the Western Alps. At the same time, the Eastern Alps were characterized more by industrial facilities that were less connected to regional industrial centers, such as Bergamo Valley (Italy) and Kranj (Slovenia).

Moreover, the continued enhancement of transportation networks during this period facilitated the greater mobility of alpine textile products. However, the greater incorporation of alpine regions into the global textile trade served as a double-edged sword: On the one hand, it facilitated the cost- and time-effective transport of materials and finished products; on the other hand, it also opened alpine regions further to competition from other textile producers, which affected the rise and fall of different industrial complexes in varied ways. Most importantly, these developments affected the geographic positioning of textile value chains. New technological advancements, such as those in the realm of transportation, encouraged the displacement of the textile value chain, a phenomenon that became increasingly apparent in the second half of the 20th century.

These ongoing advances, embedded in broader, global processes of change, shaped the second half of the 20th century (1960-1980) in terms of a shift away from traditional heavy industry to light secondary industries in the Alps, an economic strategy developed in response to increased international competition, particularly in the case of labor-intensive industries such as textile production. In the case of the textile industry, international competition, primarily in the form of lower production costs, resulted in the decrease of the alpine region's locational advantage, as production costs (particularly in terms of the cost of labor) became a crucial criterion (as opposed to proximity to energy, primary materials) for defining the sites of textile production. This resulted in the introduction of a more flexible, geographically displaced

Visit of the graduates of the Industrial Institute "Quintino Sella" in May 1952 at the spinning machine. Source: Camera di Commercio di Biella.

manufacturing system and the displacement of primary production processes outside of alpine regions, first to lower-wage areas such as border regions and then abroad. In this context, numerous textile hubs in the Alps focused on shifting from raw textile production to secondary initiatives linked to the textile industry, such as the apparel industry or textile engineering.

1.4. TEXTILE PRODUCTION IN THE ALPINE REGIONS DURING THE POST-INDUSTRIAL PERIOD

The increasing prevalence of geographically displaced textile value chains on a global scale marked a period of decline and restructuring in the alpine textile industry from the 1980s onwards. These changes were also due to broader economic trends in Europe, including shifts towards tertiary industries (including service industries such as tourism) and away from resource- and labor- intensive industries to knowledge-based ones. These trends strongly affected the sectors in the Alps that were established in the early stages of industrialization and hinged on locational advantages. The erosion of these locational advantages due to changing circumstances within the global textile industry (more favorable or competitive advantages in less-developed countries), technological advancements (energy, transport), and industrial strategies in developed countries (shifts away from primary and secondary industries) resulted in the closing down of numerous textile companies and hubs in the Alps. The relocation of the sourcing of raw materials to developing countries also negatively affected the related processing industries, resulting in the textile industry being one of the fastest declining sectors in the Alps from the 1980s onwards, with almost 80% of industrial sites closed or downsized. The timing and scale of the dismantling of the textile industry across the Alps varied due to particular factors, with the economic transitions from socialism in the formerly socialist countries firmly informing trends and changes in the eastern regions of the Alps.

Another important factor that impacted the shrinking textile industry in the Alps from the 1980s onwards was the trade liberalization process, which started in 1995 and was completed in 2005 with the signing of the

Picture from movie “Italy - in Val Gandina a frame for each family”. Source: Europeana

Modern textile factory.
Source: Industria Italiana

Modern textile production.
Source: Shutersttock

WTO Agreement on Textiles and Clothing. This agreement strongly affected the position of Alpine countries within the textiles trade, particularly in relation to large – and low-wage – textile nations such as China, India, or Indonesia, who were no longer confronted with quantitative restrictions when exporting to the EU or the United States. The lifting of trade restrictions created a new textile order in the global industry, which for alpine countries meant stronger competition from developing, low-wage countries as well as a need to reconfigure business strategies in the alpine as well as EU textile and clothing industry.

Efforts to remain competitive in the liberalized, globalized textile trade through adopting new technologies (development of man-made/technical textile fibers, new products, new production/manufacturing techniques) or improving quality, creativity, design. Another important issue is the maintaining and promotion of textile traditions and heritage, which are supported or promoted through other industries such as tourism.

Thus, in the postindustrial period, economic activities shifted towards high-value-added segments such as textile design, technical textiles, and advanced materials. Innovation, creativity, and technology became the key drivers of the economy. This transition included the development of smart textiles and technical fabrics employed in various industries

ranging from fashion to medical applications. The Alpine regions saw a diversification of their economic base, with a notable rise in the service sector, including tourism and retail. This shift helped to mitigate the economic impact of the decline in traditional manufacturing and provided new employment opportunities.

Higher education and specialized training programs were expanded to support the growing knowledge-based industries, focusing on textile technology, design, and sustainable practices. The workforce became more flexible and mobile, with individuals often pursuing multiple careers over their lifetimes. The advent of remote work and telecommuting offered new ways for people to engage with the labor market. There was an increased emphasis on education and skill development. Alpine regions became more integrated into the global economy, with policies facilitating international trade and investment. Governments supported initiatives promoting local textile producers' global competitiveness of through innovation and quality.

Efforts to preserve and promote traditional textile crafts became significant, supported by tourism and local initiatives. These efforts included the establishment of museum collections as well as the organization of diverse cultural events and educational workshops that celebrate and maintain the region's rich textile heritage. There was a political shift towards sustainable development, environmental protection, and addressing climate change in many Alpine regions. Policies were implemented to support green technologies and eco-friendly practices within the textile industry. Increased cooperation among Alpine countries and regions aimed to address common challenges and leverage collective strengths. Initiatives such as the Alpine Convention fostered collaboration on economic, environmental, and social issues, promoting regional cohesion.

In addition the Alpine textile industry began to focus on niche markets, including luxury textiles, technical fabrics, and eco-friendly products. New technologies increased efficiency, precision, and the ability to produce customized textile products on demand. The market demanded customized and personalized textile products, leading to a shift towards made-to-order and bespoke manufacturing. Operating within a global supply chain, the industry imported raw materials and exported finished goods worldwide. These global flows required Alpine textile producers to maintain high standards and innovate continually to stay competitive. The Alpine regions diversified into other industries, such as tourism, technology, and services, ensuring a balanced and resilient economic structure. While textile production was no longer the backbone of the economy, it remained important in specialized niches.

Local communities engaged in sustainable textile initiatives, promoting eco-friendly production methods and products. Efforts to preserve traditional techniques and heritage were integrated into tourism and education, fostering a sense of cultural identity and community pride. Various community-based initiatives aimed to support local craftsmanship, small businesses, and innovation. These initiatives often included partnerships with educational institutions and private companies to drive local economic development and cultural preservation.

The post-industrial period has significantly changed textile production in the Alpine regions. The focus has shifted from mass production to high-value, specialized manufacturing, leveraging advanced technologies and sustainable practices. The workforce now requires specialized skills, and many labor-intensive processes have been outsourced to maintain competitiveness. Despite these changes, textiles continue to play a role in the economy, cultural heritage, and sustainable development of the Alpine communities, reflecting the adaptability and resilience of the region in the face of global economic shifts.

SOURCES:

A substantial role of agro-textiles in agricultural applications. Available at: https://www.teriin.org/research-paper/substantial-role-agro-textiles-agricultural-applications

A Timeline of Textile Machinery Inventions - ThoughtCo. Available at: https://www.thoughtco.com/textile-machinery-industrial-revolution-4076291

Agrarian Societies (Chapter 6). Available at: https://www.des.ucdavis.edu/faculty/Richerson/BooksOnline/He6-95.pdf

Cooperation Programme. Available at: https://www.alpine-space.eu/about-us/cooperation-area/

Dubois Athenor, PH., Hintzen, N., Igarashi, N., Ramchandani, M., Coste-Manière, I. 2022. Traditional Textiles Going Local and Global. In: Muthu, S.S. (eds.) Sustainable Approaches in Textiles and Fashion. Sustainable Textiles: Production, Processing, Manufacturing & Chemistry. Singapore: Springer. DOI: https://doi.org/10.1007/978-981-19-0874-3_7

Elsasser, H., Bürki, R. 2002. Climate change as a threat to tourism in the Alps. Climate Research 20.

How did the Industrial Revolution change the textile industry?. Available at: https://www.bbc.co.uk/bitesize/topics/zq226g8/articles/zys7xbk

Keane J., Te Velde, D. W. 2008. The role of clothing and textile industries in growth and development strategies. ODI. Available at: https://odi.org/en/publications/the-role-of-clothing-and-textile-industries-in-growth-and-development-strategies/

Modica, M. 2022. Alpine Industrial Landscapes: Towards a New Approach for Brownfield Redevelopment in Mountain Regions. Wiesbaden: Springer VS. DOI: https://doi.org/10.1007/978-3-658-37681-9

Perko, D., Orožen Adamič, M. (eds.). 1998. Slovenija – pokrajine in ljudje. Ljubljana: Mladinska knjiga.

Perlik, M. 2019. The Spatial and Economic Transformation of Mountain Regions – Landscapes as Commodities. London: Routledge. DOI: https://doi.org/10.4324/9781315768366.

Post-industrial society. Available at: https://en.wikipedia.org/wiki/Post-industrial_society

Sharma, N., Allardyce, B., Rajkhowa, R., Adholeya, A., Agrawal, R. 2022. A Substantial Role of Agro-Textiles in Agricultural Applications. Frontiers in Plant Science 13. DOI: 10.3389/fpls.2022.895740

Supply of labour during early industrialisation – TextileLab. Available at: https://www.textilelab.net/wp-content/uploads/2022/05/Supply-of-labour-during-early-industrialistion.pdf

Textile - Manufacturing, Fibers, Processes. Available at: https://www.britannica.com/topic/textile/The-modern-textile-industry

The Common Thread, Textile Production during the Late Iron Age. Available at: https://portal.research.lu.se/en/publications/the-common-thread-textile-production-during-the-late-iron-age-and.

The Living Textile Heritage of the Alps - Alpine Space Programme. Available at: https://www.alpine-space.eu/event/the-living-textile-heritage-of-the-alps/

The Textile Industry in the British Industrial Revolution. Available at: https://www.worldhistory.org/article/2183/the-textile-industry-in-the-british-industrial-rev/

Van Voss, L. H., Hiemstra-Kuperus, E., van Nederveen Meerkerk, E. (eds.) 2010. The Ashgate Companion to the History of Textile Workers, 1650–2000. London and New York: Routledge.

BIELLA AND VALSESIA

FRANCINA CHIARA

HISTORICAL INTRODUCTION

Piedmont is bordered to the west and north by the Alpine arc, and in the areas at the foot of the mountains sheep farming contributed to the development of an important wool culture. In the Biella and Varallo areas in particular, with their numerous valleys rich in watercourses, an elaborate production has developed over time, ranging from yarn to fabrics.

In the Biellese region, the first traces of textile production date back to pre-Roman times, and in the Middle Ages the first statutes appeared to regulate production, which went from domestic production to being the subject of trade.

Between the sixteenth and eighteenth centuries, the processing of wool spread throughout the region and included both fibre preparation and yarn production as well as weaving, as evidenced, for example, by the "Supply of merchants and craftsmen from the village of Mosso in 1582", which mentions professions related to wool such as wool combers, weavers and merchants In the Biellese valleys, wool processing played a fundamental role for peasant families as a supplement to the meagre income from agriculture. Between the sixteenth and seventeenth centuries, a territorial differentiation of manufactured goods developed: The Elvo valley specialised in "fine cloth"," while in the valleys of Strona and Sessera "coarse and common cloth" was produced. In this phase, the system was still family-run, but the figure of the merchant entrepreneur, who took over the production of local craftsmen, began to prevail.

In the eighteenth century, the noble Ambrosetti family in Sordevolo in the Elvo Valley invested in the production of fine cloth and became one of the main suppliers of clothing for the Savoy troops, to whom they sold a woven fabric known as "Ambrosetta" In the same century, the production of high-quality felt hats began and concentrated in the Val di Cervo; chronicles from that time compared the products from Biella with those from Lyon, which were considered the best at the time.

From the second decade of the nineteenth century, the widespread introduction of mechanical tools at the various stages of the wool production cycle triggered a process of innovation that profoundly characterised the territory with the construction of specially designed and built industrial architectures in which individual phases, long sections of the production chain or, in some cases, the entire cycle took place. The beginnings of mechanisation are linked to the Gian Giacomo and Fratelli Sella wool spinning mill, which was founded in 1817 on the Strona stream in Valle Mosso in an old paper mill equipped with large water wheels that had been converted. Despite the strong influence of entrepreneurial constraints and state restrictions, the industrialisation of the wool sector developed rapidly and was accompanied by the emergence of local textile machinery, so much so that Biella was dubbed the "Manchester of Italy".

From the second half of the nineteenth century, the range of Biellese products, which included orthogonal yarns and fabrics mainly for men's clothing, was enriched by knitwear thanks to orders from the army. In this sector too, the introduction of straight and circular mechanical looms enabled a noticeable leap in quality, especially in the centres of Camandona and Pettinengo with the knitwear factory "Bellia Bernardo e Figli" (later Liabel SpA) and in Biella (Boglietti knitwear, which still exists today).

In the twentieth century, Biellese fabrics accompanied the creation of customised menswear and the development of the men's and women's clothing industry and Italian fashion in its most prestigious brands, reaching a high level of quality. Production focussed on serving a niche market that gradually shrank at the beginning of the twenty-first century. In 2001 there were 1,555 textile companies, while in 2021 there were only 669, a decline that is disproportionate to the value of exports in a sector that has deep-rooted expertise.

Lanificio Paoletti, the warp yarns of wool on the loom. Source: Lanificio Paoletti.

THE PRODUCTION CYCLE

Since its development, the manufacture of Biellese wool has encompassed the various stages of wool production, from fibre to fabric. Between the seventeenth and eighteenth centuries, in the valleys of Biellese, alongside the figure of the craftsman dedicated to wool processing, spinning and weaving for his own consumption and for limited local sale, the figure of the "merchant entrepreneur" emerged. Armed with an inheritance of land and livestock that guaranteed them a certain amount of additional wealth, the "merchant entrepreneur" purchased raw wool at markets in Borgosesia or even as far away as Bergamo and entrusted it to craftsmen. They then purchased the finished pieces, had them refined by fulling— - which was done in the fulling mills or "folloni" with hammer-driven fulling sticks along the streams — and sold them at the wealthy urban markets. Sometimes these merchant-entrepreneurs took on the role of "manufacturer" and centralised certain phases of the wool production cycle — sorting and washing the wool, warping, dyeing and finishing — in workshops they set up in their own homes, transforming them into real industrial enterprises. Examples of merchant families involved in the production and trade of fabrics in the eighteenth century were the Piacenzas, a manufactory active since 1733, the Ambrosettis and the Vercellones from Sordevolo.

In the nineteenth century, the production stages were mechanised. Spinning, which was traditionally carried out by women (spinners) in peasant families, was the first to be centralised and mechanised in factories. In order to improve the quality of the fabrics produced, the industrialists in Biella centralised weaving in factories, which was carried out on manual looms by artisan farmers who could not reconcile work in the factories with work in the fields, which was still necessary to ensure the family's livelihood. With the general introduction of the power loom, the handlooms were abolished and the craftsmen became workers in multi-storey Manchester-type factories with vertical departments for energy optimisation: wool preparation and combing on the lower floors, spinning and weaving on the upper floors. At the beginning of the twentieth century, with the introduction of electricity, many industries moved to the bottom of the valley or to the plain, close to transport routes, and built new shed-like facilities, providing uniform lighting for large working spaces and often characterised by greater attention to the facades and decoration of the factory.

Loom Schonner at the Fabbrica della Ruota, beginning of the XX Century. Source: Film Commission Torino Piemonte

BIELLA TODAY

Even today, Biella still produces around 40% of all high-quality woollen fabrics in the world. The processed yarns consist mainly of high-quality wool such as superfine merino wool and other excellent materials such as cashmere, alpaca and mohair. In industrial reality, there are both large companies such as Ermenegildo Zegna in Trivero and Loro Piana, which was founded in Trivero in the early nineteenth century and later moved to Quarona in Valsesia and is now part of the luxury conglomerate LVMH, as well as medium-sized and small companies that are linked to each other. Among the latter is Vitale Barberis Canonico, which has carried out research to focus its production on sustainability and has developed a carded flannel made of pure wool with 40% recycled fibres from fabric waste from the wool mill.

Fabbrica della Ruota a Pray:
Source: Informazioneecultura

The quality of the yarns and a long tradition of expertise enable the district to remain competitive. In the wake of globalisation, the Biellese wool spinning mills have experienced different fates: while some are still in operation and enjoy a good reputation, others have ceased production but still represent an industrial archaeological heritage that is part of the route known as the "wool route" that connects Biella to Borgosesia. Not to mention that the archives of important manufacturers have been preserved, such as those of Lanificio Pria in the Rete Archivi Biellesi.

Since 30 October 2019, the city of Biella has been part of the UNESCO Creative Cities network. The motivation for joining this network is the creativity in the field of "craftsmanship and folk art", i.e. the "know-how" that has been able to express and develop a recognisable quality in fabric production from generation to generation.

SOURCES:

Barelli, M. L. 1995. Fabbriche formato cartolina: patrimonio industriale biellese e valsesiano nelle cartoline d'epoca. Catalogo della mostra (Pray Biellese, Fabbrica della ruota, giugno-ottobre 1995). Torino: CELID.

Coda Bertetto, A. 1984. L'industria biellese. Biella: Unione biellese.

Coda, A. D. 1927. Contributo alla storia della maestranza laniera nel Biellese. Torino: Regio Istituto superiore di scienze economiche e commerciali.

DocBi. Available at: https://www.docbi.it/modules/smartsection/item.php?itemid=154

Gariazzo, M. (eds.) 1953. Biella Manchester d'Italia: storia dello sviluppo industriale commerciale e artigianale del Biellese: caratteristiche e possibilità di valorizzazione turistica della regione. Biella: Ramella.

Lanificio Alfredo Pria, già Lanificio Boussu. Available at: https://www.retearchivibiellesi.it/occorrenze/831-lanificio-alfredo-pria-gia-lanificio-boussu-architettura

Lanzardo, L. (eds) 2001. La fabbrica e la sua immagine: cento anni di fotografia dell'industria biellese. Ponzone: DocBi - Centro studi biellesi.

LIABEL. Available at: https://www.imprese.san.beniculturali.it/web/imprese/enterprise/dettaglio-soggetto-produttore?id=58216&codiSan=san.cat.sogP.58216

Negri, M., Basilico, G. 1989. Esplorazioni di fabbriche: percorsi nell'archeologia industriale di Biella. Catalogo della mostra (Biella, febbraio 1989). Milano: Electa.

Neiretti, M. 1978. La manifattura laniera biellese in Alto Elvo, Biella: Giovannacci.

Ormezzano, V. 1926. Pietro Sella e la grande industria laniera italiana. Biella: Scuola Tipografica Ospizio di Carità.

Ormezzano, V. 1928. Il Biellese ed il suo sviluppo industriale. Varallo Sesia: tipografia valsesiana di Testa.

Sodano, M. 1928. La lana: produzione commercio industria. Biella: Associazione fascista dell'industria laniera italiana.

Sodano, M. 1953. Degli antichi lanifici biellesi e piemontesi. Biella: Unione biellese

Sodano, M. 1969. La pettinatura della lana: origine e suo sviluppo. Biella: Giovannacci.

Spallanzani, M. (eds) 1976.Imprenditori e tecnici stranieri nell'industria laniera piemontese agli inizi del XVIII secolo. In: Produzione, commercio e consumo dei panni di lana, nei secoli XII-XVIII. Atti della seconda Settimana di studio (10-16 aprile 1970), Firenze: Olschki.

Spina, L. (eds.) 1990. L'arte del cappello in Valle Cervo. Cultura materiale nel Biellese. Biella: Rosso.

CRESPI D'ADDA

TATIANA BAJUK SENČAR

HISTORY

The history of Crespi d'Adda offers intriguing insights into the industrial development of the cotton textile industry in northern Italy from the late 19th century onwards. Crespi d'Adda was also added to the UNESCO World Heritage List as a significant element of textile industrial heritage as one of the best-preserved company towns in Europe.

Its story begins with Cristoforo Benigno Crespi, an entrepreneur from a family with a long tradition in the textile industry. In 1877, he purchased 85 hectares of relatively isolated rural land between the Adda and Brembo rivers in the Lombardy region to build a cotton mill. In addition, Crespi also planned to build a small town to house the cotton mill workers, an increasingly prevalent practice in Europe at the time among socially minded industrialists who needed to build their factories near rivers (and not necessarily near towns or cities).

The textile factory, located along Adda River, initially ran with the aid of a hydro mechanic plant with one turbine and was dedicated to spinning and twisting cotton fibers imported from India. The factory, which was the main building in the town, was initially a large, ground-floor structure composed of large spaces with north-facing shelf roofs. The factory expanded gradually, with additional departments or buildings dedicated to weaving and dying cotton.

The first residences for the workers were three large, square buildings of three floors, each housing up to 20 families. However, Cristoforo Benigno Crespi, together with his son, Silvio Crespi, who studied the operation of British factories and the economic situation of factory workers, decided on a more progressive evolution of the company town. As factory operations – and the town – expanded, the Crespi built instead small houses or cottages for workers with gardens as well as buildings for a range of services necessary for everyday life: a school, a hospital/clinic, a community center, a grocery store, a restaurant, a tavern, a theater, public baths, a church, even a cemetery. The town also features several villas for factory clerks and executives as well as the Crespi family castle, which served as their summer residence. The updated hydroelectric plant, which was installed in 1909, offered free electricity and public lighting for the entire town. Completed in the mid-1920s, the factory at its highest point provided work for up to 3600 people, and the company town was equipped with all the necessary services for community life.

However, Crespi d'Adda experienced numerous challenges in the 20th century that impeded its

Crespi d'Adda (Bergamo) Italy, offices and hall door built in 1924. Source: Wikipedia

A factory worker's house in the industrial model village of Crespi d'Adda, Lombardy, Italy. Source: Wikipedia

successful operation. While the Crespi family successfully rebounded after the hardships of the First World War, they could not successfully survive the global economic crisis of 1929, which strongly affected the cotton industry. Due to economic hardships, the family Crespi founded a society with *Cotonificio veneziano e manifatture Toscane* (which later became STI), which took over the factory and the property.

From the 1950s onward, Crespi d'Adda experienced a slow decline while still remaining under the ownership of a single company until the 1970s. In the mid-'70s, after the failure of the company at the time owner of the village, the entire property was put into liquidation, and residential buildings were purchased largely by existing residents, who were to a great extent descendants of the company's initial workers. The factory was purchased in 1976 by Legler to produce denim, and is later purchased in 1989 by Gruppo Polli. Thus, the factory operated to differing degrees until 2003, at which time it closed its doors for the last time. In 2013, the society Odissea, member of the group Percassi, bought the factory with plans to transform it into the new headquarter of Percassi, with offices and centers for research as well as a cultural center.

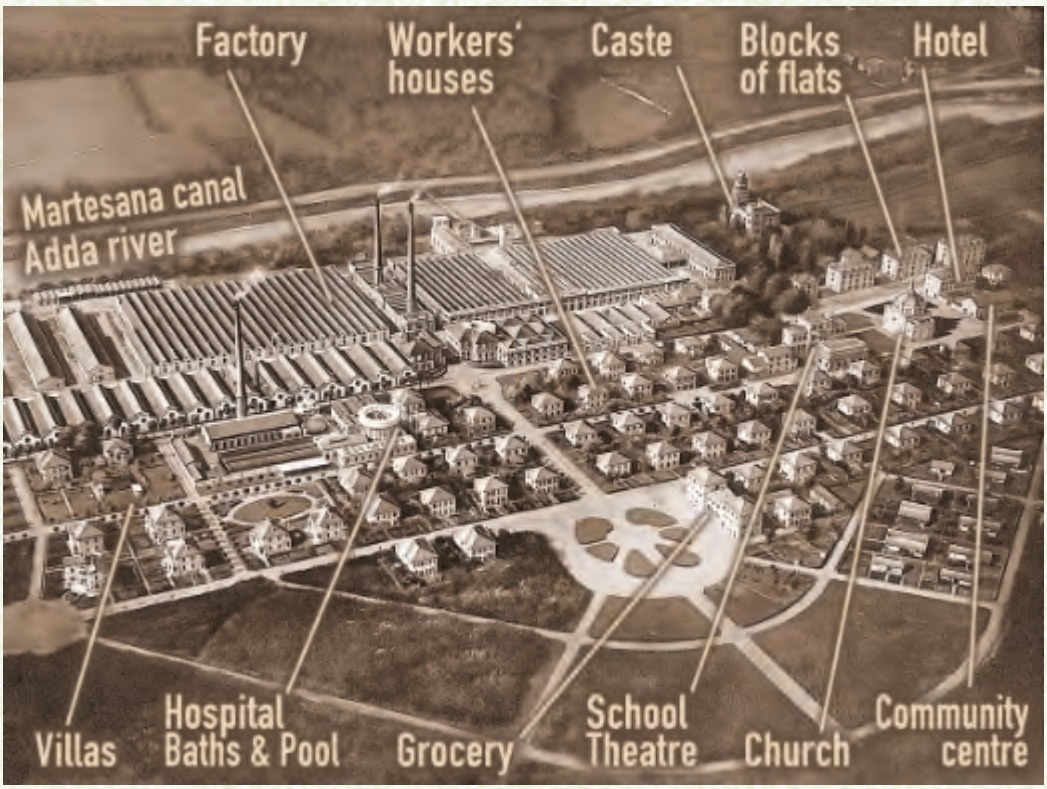
In 1995, Crespi d'Adda was added to the UNESCO World Heritage List as the best-preserved company town in Southern Europe with a (then still operating) factory. Today, the ownership of the various properties (factory, town buildings) is divided among public (municipal), religious (Roman Catholic Church - Curia of Bergamo), and individual or private. At the national level, the town is designated as an "*urban center of historical character and environmental importance,*" protecting the town's historic center and the surrounding landscape. At the municipal level, protection is provided through prohibitions to inappropriate urban development or modifications.

SOURCES:

Crespi d'Adda: History. Available at: https://villaggiocrespi.it/assemble/0-get.php?sez=STORIA&lang=EN

Crespi d'Adda: UNESCO World Heritage Center. Available at: https://whc.unesco.org/en/list/730/

UNESCO. 1995. Crespi d'Adda. Advisory Board Evaluation. Available at: https://whc.unesco.org/document/154134



Crespi is the name of a family of cotton manufacturers from Lombardy. This family realized an "ideal workers' village" nearby their factory, along the Adda river. Source: CRESPI CULTURA

DEVELOPMENT OF THE LODEN FACTORY IN SCHRUNS

MICHAEL KASPER

HISTORICAL DEVELOPMENT

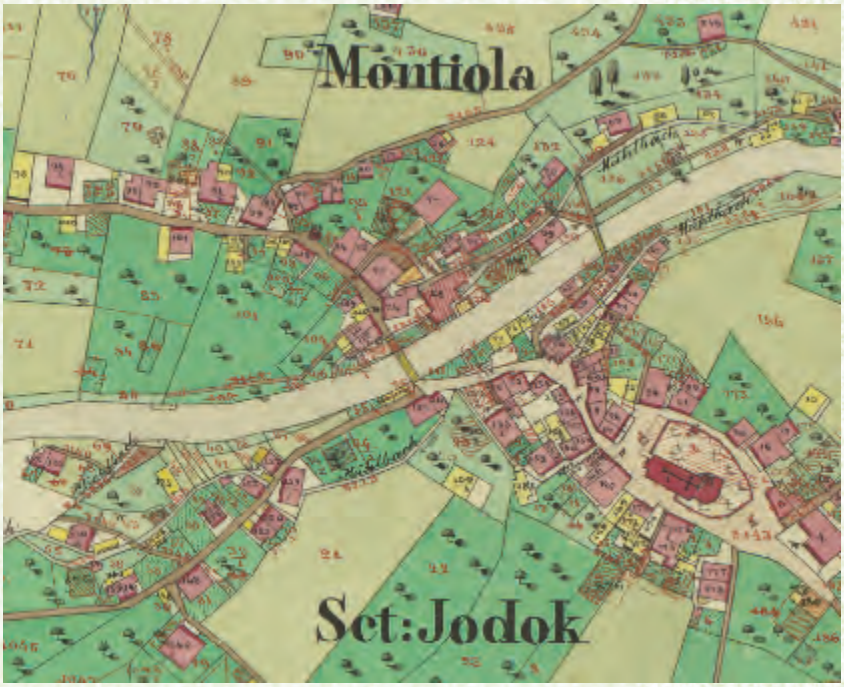
In 1819, Montafon had a population of just over 8,300. They lived mainly from agriculture, seasonal migration and commercial activities such as textile home work. Pre-industrial spinning and weaving were carried out on behalf of so-called publishers, who brought the raw materials and collected the processed goods again.

The company was founded in 1826 by the dyer David Tschofen and his two business partners, Kristian Widerin and Franz Josef Burtscher. In contrast to the large Vorarlberg textile factories, the Schruns company was not dedicated to cotton processing but to spinning and weaving sheep's wool. In the 1880s, the company employed around 20 people. The product range mainly included indigo blue loden for the production of men's clothing. In the early years, the company changed hands repeatedly due to deaths and misguided speculation. In 1886, Heinrich Mayer, the son of a Schruns mill and inn owner, acquired all the factory equipment. At that time, the company consisted of a so-called upper and a lower factory. From then on, Heinrich Mayer used the upper factory as a weaving mill, dye works, and press. The lower factory served the skilled clothier as a spinning mill and fulling mill. In the following years, Mayer invested in modernizing the machinery and was able to both increase capacity and expand the product range. At the same time, he began exporting to Switzerland. By 1894, the workforce had increased to almost 30 employees.

The Schruns location was ideally suited for the Mayer loden factory. On the one hand, there was the possibility of using water power; on the other hand, there was a satisfactory transport connection at the latest after the Montafonerbahn railway went into operation in 1905. In 1896, the Mayer family started up an electricity plant in Schruns. Even after the takeover by the Montafonerbahn in 1904, the Litz power station supplied electricity for the Mayer textile company. Another important factor for the location was that the loden factory could obtain its raw material, sheep's wool, directly from the farmers in the area. The farmers took advantage of the opportunity to have their wool processed into fabrics at the loden factory in return for a wage. The farmers sold the wool they did not need to the company, which used it to make loden coats and other products. In 1910, the upper factory was

Heinrich Mayer's successor's loden factory in the winter of 1937/38. The left part of the building (house no. 90 with a pointed gable roof) housed the office, fabric shop, sewing shop and private living quarters, as well as the baths in the basement. In the factory building on the right (house no. 86) were, among other things spinning, weaving, finishing, dyeing and storage. Source: © Montafon Archiv.

The Upper and Lower Loden Factories in Schruns, each marked. On the map of 1857 also shows the Mühlbach on both sides of the Litz. Source: © Land Vorarlberg / BEV.



Cleaning up after the disaster, 1910. Source: © Wirtschaftsarchiv Vorarlberg.

badly damaged by a flood and had to be extensively restored.

Upon Heinrich Mayer's death in 1914, his brother-in-law and previously authorized signatory of the company, Max Borger, and his nephew Emil Fitsch took over the business in equal shares. From then on, the company operated under the name "Heinrich Mayer's Nachfolger." In the years of the First World War, army deliveries ensured a high order quota. While the business initially achieved good profits in the 1920s, the economic crisis of the 1930s caused a slump in sales. At times, the farmers could no longer pay for the processing of their wool with money but settled their bills with goods in kind, such as fruit, eggs, schnapps, butter, meat, or wood.

The export business hardly played a role at that time. In 1930, only 9.6 percent of the turnover came from foreign business – largely deliveries to Belgium. The export share decreased in the following years and tended towards zero after the occupation of Austria by Nazi Germany in March 1938.

In 1934, Max Borger handed over the company to his sons Karl, Otto, and Hugo. The production range now included men's suit fabrics, weather coat fabrics, loden fabrics for mountaineers and skiers, worsted fabrics, carded fabrics, bedspreads, weather coats, loden coats, mittens, and socks. Some of the finished goods were made at home. In addition, the company had opened a sales outlet in Schruns. However, the actual distribution of the goods, was done through wholesalers, retailers, and commission agents.

While turnover initially remained low in the 1930s, it more than doubled in 1938 compared to the previous year. The management attributed the increase to a "general upturn in business." In fact, the following year brought another sharp drop in sales.

View of Schruns around 1900. Source: © Montafon Archiv.

In the 1960s, expeditions were equipped with loden clothing for loden clothing in the 1960s. Source: © Montafon Archiv

Advertising poster of the Schruns Loden Factory, designed by the Tyrolean graphic artist and artist Heinrich Berann around 1936. Source: © Wirtschaftsarchiv Vorarlberg.

Today is the factory building home to the Kunstforum Montafon, among others. The renovated exterior façade still characterises the townscape of Schruns and makes it clear how quickly economic life changes. Source: © Friedrich Böhringer)

From 1940, the company produced cloth trousers and coats for the Wehrmacht. In the spring of 1941, the company's tailoring shop worked at 100 percent capacity with Wehrmacht orders. The management stated they could not accept additional orders with the current number of employees. The workforce amounted to 35 people. Due to conscription for military service, the company employed only four male employees.

POST-WAR PERIOD

In the meantime, the company no longer processed only sheep's wool but expanded to also process rayon, which was purchased from Zellwolle Lenzing AG, founded in Upper Austria in 1938. Sheep breeding in Montafon, on the other hand, lost importance. This trend continued after 1945. The company increasingly processed Australian and South American imported goods, while domestic sheep's wool only played a subordinate role. At the same time, the export business experienced a strong revival. Around 1960, about half of the loden fabrics produced were already sold outside Austria.

At the end of the 1960s, there was talk of a "split economy" in Vorarlberg. While sectors such as the knitwear and hosiery industry were still booming, the domestic cotton industry struggled with competing imports from low-wage countries. Heinrich Mayer's Nachfolger also came under cost pressure and had to accept a drop in orders.

By 1968, the number of employees had fallen to 15, and the company even had to occasionally switch to short-time work. The Borger family tried to sell the company in 1969, given that Otto and Hugo Borger wished to retire due to old age. Karl Borger had already died in 1929, and his share in the company had passed to his son Gerhard. The company owners justified their intention to sell due to the advanced age of the first two partners. Although the company was free of debts and encumbrances, no buyer was found. The state labor office also intervened and tried in vain to arrange a sale to the Ravensburg textile company Fritz Moll. These efforts were justified by the fact that there was a lack of jobs for men in the Schruns area due to the strong tourism industry and the weak agriculture. In September 1970, the company Heinrich Mayer's Nachfolger finally ceased operations.

In 1993, the owners sold the factory building. Today, it is home to the Kunstforum Montafon, among others. The renovated exterior façade still characterizes the Schruns townscape, making it clear how quickly economic life can change.

SOURCES:

Feurstein, C. 2012. Die Wirtschaft des Montafons im 19. Und 20. Jahrhundert. In: Schnetzer, N. ; Weber, W. (eds.). Montafon 4. Bevölkerung – Wirtschaft. Das lange 20. Jahrhundert. Schruns: Stand Montafon, pp 46-84.

Feurstein, C. 2018. Vom Montafon zum Himalaya. Geschichte der Schrunser Lodenfabrik. In: Feurstein, C., Kasper, M. (eds.). Vom Montafon zum Himalaya. Geschichte der Schrunser Lodenfabrik. Schruns: Montafoner Schriftenreihe.

2. WOOL

KATARINA ŠRIMPF
VENDRAMIN

Wool is a naturally renewable and biodegradable fibre, making it more sustainable than synthetic textiles. The sheep grow a new fleece yearly, ensuring a continuous wool supply. The production process has a low environmental impact and requires minimal chemical treatment. In addition, the longevity and recyclability of wool contributes to a circular economy. Wool products can be repaired, reused and eventually composted, which reduces waste and promotes resource efficiency. This sustainable cycle makes wool an excellent choice for environmentally conscious consumers and businesses looking to minimise their environmental footprint.

Wool has long been a cornerstone of textile production and is known for its durability, warmth and versatility. In mountain regions, sheep farming and wool production have been integral to the local economy for centuries. The untouched mountain meadows offer ideal grazing conditions, which result in high-quality wool fibres. These fibres are then processed and transformed into a wide range of textile products, including warm and durable garments, blankets, carpets and traditional folk costumes. In the past, wool production was an example of sustainability, as every part of the wool was utilised differently. From sheep shearing to weaving, every step of wool production emphasises reuse and recycling.

Even today, there are still more than 4.5 million sheep in the Alpine region, but local wool is almost non-existent in some places. Farmers throw the wool away after shearing because of its low value or lack of knowledge of modern utilisation possibilities.

This chapter examines the evolution of wool production, technological advances, and the social and economic impact on the region. By delving into the past, we uncover how the unique geography and climate of the Alps have shaped a distinctive textile heritage that continues to influence modern practices. It also uncovers the steps of traditional wool production and highlights the contemporary challenges associated with wool.

2. 1.HISTORY

The history of textile production and the use of wool in the Alpine region is a rich and multi-layered story closely interwoven with the cultural and economic development of the communities. From the early domestication of sheep to sophisticated spinning and weaving techniques, wool has played a central role in the daily life and economy of the inhabitants of the Alps. This chapter highlights some fragments from the rich history of the production of woollen fabrics in the Alpine region.

2.1.1. PREHISTORY

The oldest bone needle in Europe was found in Potočka Zijalka, Slovenia, which proves the knowledge of making clothes as early as 35,000 years ago. Source: Pokrajinski muzej Celje

Archaeological research has shown that clothing in the Neolithic period, when the first permanent settlements were established in Europe, consisted entirely of plants. The use of wool for apparel emerged in this region around 2000 BC, as evidenced by finds in France, Germany, Italy, Switzerland and elsewhere. By 1600 BC, woollen textiles were widespread in Europe, although the use of wool for clothing was already known in Central Asia and China.

Sheep farming played an essential role in the Alpine economy, with sheep's wool as the primary fibre source for textile production. However, this economy developed gradually. Wool became particularly important from the Bronze Age onwards, as the oldest sheep breeds did not have a continuously growing fleece but shed their fleece naturally, which was then collected instead of being shorn. Archaeological finds from the Po Valley, the Montale, and the Terramare in Italy point to targeted sheep breeding, which led to the development of breeds that could be shorn. This development also influenced transhumance, as larger flocks, necessary for producing larger quantities of wool, required more space and could no longer remain close to settlements but had to move around to ensure a sufficient food supply.

The basic technology for processing wool was already developed in prehistoric times. After the wool had been carefully selected, it was shorn from the sheep, cleaned to remove impurities, and spun into yarn or thread. This yarn was used for weaving or knitting to make textiles for various purposes, such as clothing, blankets and more.

DEVELOPMENT OF WOOL BEEADING AND TRANSHUMANCE IN THE ALPS

The mouflon is thought to be the primary ancestor of domestic sheep. Source: Wikipedia

Evidence shows that transhumance, in which livestock is moved seasonally between different grazing areas, was established in certain parts of the Alps in the Neolithic period and later. Archaeological and palaeoecological evidence shows, for example, that mobile pastoral communities in the French Alps have inhabited rock shelters and caves at medium altitudes, known as *grottes bergeries*, since the late sixth millennium BC. In the third millennium BC, grazing activity seems to have extended to higher pastures above 1,800 metres above sea level.

Over time, there was a gradual transition from unspecialised short-distance movements to a specialised long-distance strategy or long transhumance during the Bronze Age, which prevailed until the Roman period.

Archaeological evidence also points to a gradual transition from sedentary pastoralism in the Early

Seasonal high-altitude transhumance is practiced even today in practically all parts of the Alpine area. © Maison de la transhumance.

Bronze Age to the onset of seasonal mobility towards the end of the same period in the Po Valley and other regions of northern Italy, including the Dolomites and Lombardy. They indicate seasonal migrations of herders between the summer pastures in the Pre-Alps and the Apennines and the winter pastures around the diked villages in the lowlands. This specialisation of grazing activity, mainly focused on wool and possibly also milk production, the connection with the central settlements, the control of the grazing areas by the hill forts and the seasonal long-distance migrations indicate the development of a specialised form of long transhumance in the central Po Valley during the Bronze Age, comparable to the grazing strategies documented in Italy during the Roman period.

The socio-economic complexity of the Terramare system played a crucial role in the transition of transhumance from a local to a regional phenomenon, possibly controlled by the elites. This development is closely linked to the emergence of social and economic complexity, the establishment of political control over territories and the expansion of trade networks and textile production.

HALLSTATT TEXTILE FINDINGS

An important archaeological site for understanding textile production in the Alpine region is near Hallstatt, a lakeside village in the Austrian Salzkammergut region, where people have been exploiting a salt mine since the Middle Bronze Age.

These finds are fascinating from various points of view, from colouring to production techniques. The finds in Hallstatt, for example, are the earliest evidence of woad being used to dye textiles in Europe. They also showed that the dyeing of fabrics in the Hallstatt period was much more widespread than previously thought and that complicated dyeing techniques were used. They also show how different shades of colour were achieved by over-dyeing and mixing dyes.

In addition, some remains indicate knowledge of felting techniques, as archaeologists have discovered that the surface of the textiles was occasionally altered by fulling to improve its wind and water-resistant properties. This process, known as fulling or felting, is still used today in manufacturing the famous loden coat, a traditional item of clothing in the Salzkammergut.

Archaeological finds from the Copper and Bronze Ages have also been found elsewhere. One of these sites was near Škofja Loka in Slovenia. The findings indicate that the population in the Škofja Loka area was spinning and weaving at that time, albeit on a much smaller scale. The oldest archaeological evidence of weaving in these places dates back to the Eneolithic or Copper Age (3800–2300 BC). During the excavations in the Lubnik Cave and the Kevdrc Cave, clay weights for looms were found alongside other material remains.

The stele-shaped form of the loom-weights from Monte Loffa (photo: S. Marchesini). Source: S. Marchesini, M. Migliavacca, Numbers and letters as tools of production processes in Iron Age:the case of the weight looms in ancient Lessinia (Northern Italy).

2.1.2. ANTIQUITY

Textile production in the Alpine region during antiquity was influenced by the cultures and civilisations that then inhabited the region and by the general patterns of textile production in the broader ancient world, especially Roman culture.

The Alpine regions offered favourable conditions for sheep grazing, which contributed to the availability of wool as a raw material. The rough terrain and harsh climate required the production of warm, durable textiles that could withstand the alpine environment. For this reason, wool became the most important fibre for textile production, mainly due to the importance of sheep husbandry in the Alpine regions. Sheep farming provided a steady supply of wool that was processed through shearing, cleaning, spinning. and weaving into a wide range of textiles for clothing, household items and trade.

In antiquity, textile raw materials were generally processed into finished products at or near the site where they were grown or produced. In the north, accordingly, the distribution of larger centres of production largely corresponded to that of raw materials, with only the highest quality unspun raw wool and flax being traded. Throughout the Roman period, Po Plain was mainly known for its high-quality wool and wool textiles. However, in other areas, like the Biellese area, the earliest traces of specialised textile activities date back to Roman times.

Textile production in antiquity was still primarily a domestic or local activity carried out by women in the household. Spinning wheels and looms were used to produce yarn and for weaving. The skills and knowledge required for textile production were passed down from generation to generation, ensuring the continuity of this traditional craft.

The ancient textiles produced in the Alpine areas served local consumption and trade. The region's strategic location as a transit route between northern and southern Europe facilitated the exchange of goods, including textiles, with neighbouring regions and beyond. Such is the case of the value chain that was established between the Austrian Magdalensberg and the Italian Aquilea.

Transhumance in the Alpine region during Roman times was an important aspect of agricultural and pastoral life, reflecting continuity with earlier practices and adaptation to Roman influences. The planned breeding of sheep for wool was mainly reflected in the phenomenon of transhumance, as larger herds of sheep took up too much space near settlements. Intentional breading was also reflected in the quality of the wool. The quality spectrum of fleeces at that time ranged from hairy medium and general medium wool in the north to genuine fine wool, which appeared nearer to the Mediterranean, where centres of more extensive wool production also started to appear.

The fleeces were sheared in spring and early summer with iron shears that look surprisingly modern. However, the old practice of plucking was retained because it selected the finer fibres and left the hairs behind. Inscriptions in the wool towns of the Po Valley and elsewhere describe combing the wool to obtain longer fibres for finer yarns. These methods were already well developed before the arrival of the Romans, but the Romans introduced further improvements, especially in the organisation of work and techniques.

Before the garments made on the loom could be given to the tailor or worn, they had to be finished, which was the fuller's job. He cleaned the woollen cloth of excess lanolin and dirt, which shrank it to a firmer texture and gave it an acceptable surface appearance and feel. Fulling was used to make the fabric denser and/or waterproof, preferred for

outerwear or woollen sails. The fabric was kneaded, stomped, and pounded in wet and preferably warm conditions until the surface was matted to the desired degree. Smoothing was used to give the fabrics a shiny and even surface. A simple round and smooth tool made of stone or glass was used for this process. Several lead labels, known as *tesserae plumbeae*, document the existence of a specialised and extensive textile finishing industry. In the Roman world, fullers were mainly found in the cities, where they invested in fixed equipment in small workshops.

REGIONAL VALUE CHAINS - CASE OF AQUILEIA AND MAGDALENSBERG

Virunum at Magdalensberg was the seat of the Noricum kingdom or federation of tribes, encompassing most of modern Austria and a part of Slovenia, dating back to approximately 400 BC. In the mid-1st century BC, decades before Noricum became a province of the Roman Empire, merchants from northeastern Italy established an emporium, a trading place on Magdalensberg. These Roman merchants, mainly from Aquileia, represented prominent business houses. Aquileia was approximately 200km away, which a two-day walk could reach.

Noricum was renowned for its famous Noric steel, which was extensively used in the production of Roman weapons. The region's trading products also included gold and salt. However, archaeological evidence indicates that textiles were also significant trading commodities, as the textile craft in the eastern Alps had already seen significant developments throughout the Bronze and Iron Ages.

Considering the number of textile tools found, many inhabitants of Magdalensberg must have earned their living from the textile business, employed by contracts and controlled by the local staff of Roman merchants or textile companies. As the archaeological remains of tools were scattered all over town and mixed with household refuse, textile production was based on outwork instead of centralised production in workshops.

Northern Italy was one of the central regions and markets of the Roman textile trade, and the various trade connections of the numerous merchants who operated in this area may well be considered the origin of textile production in southern Noricum. Due to the country's richness in iron ore and the local tradition of steel production (Ferrum Noricum), production must have been cheaper than in Italy. Textile production and trade at Magdalensberg may have been organised similarly, and at least one of the lead labels (*tesserae*) found at the site suggests connections as far away as Padua.

Pilaster of the fullers ("fullones"), Pompei. Source: Museo Galileo

These labels, *tesserae*, are about 2-5 cm long and 1-2 cm wide. They are comparable to today's clothing tags in that they bear the names of personnel and customers of fulleries; they indicate names and prices of garments, wages in the textile trade, colours, chemicals, and other relevant information.

One tessera possibly provides information about the textile trade between Magdalensberg and Padua in Italy. On one side are the names Liccaia et Trauseus, interpreted as business partners; on the reverse side is another word for a woollen garment or mantle, *gausapum*, which, according to literary sources, is the best-known product of Padua's textile industry in antiquity. On this basis,

Grave-stone of a Roman girl of the 2nd Century AD, from Virunum, Austria. Author. O. Harl

some researchers believe that a textile trade with Padua or even of a fullery existed, which was run by immigrants from Padua who settled on the Magdalensberg. However, another interpretation could be that the fulling and finishing of the textiles produced on Magdalensberg was carried out in one of the textile centres in Italy, since the large enterprises there had sufficiently large fulling machines to process enormous quantities of unprocessed garments. In this context, the business of Liccaia and Trauseus could also be considered. In Altinum, one of the central wool markets of northeastern Italy, there are several inscriptions related to the textile business.

Although the exact nature of the connection between Magdalensberg in present-day Austria and Patavium/Padua in present-day Italy is not entirely clear, it is evident that there was some form of cooperation in textile production during the Roman period. Other tesserae show that sewing or mending was an essential activity in the textile processing of this early Roman city, as demonstrated by the texts on the lead labels.

2.1.3. LATE ANTIQUITY AND EARLY MIDDLE AGES

During the Late Antiquity and the Early Middle Ages (400 AD - 800 AD), textile production in the Alpine regions underwent significant changes due to political, social and economic transformations. It was the time of the Roman Empire's decline and the migration of peoples. The Slavs started moving from Eastern Europe and reached Central Europe and the Alps in

Map of Roman Italy showing the places with particular evidence for wool production. Source: M. Flohr. The Wool Economy of Roman Italy

Woman with distaff in the hand in 'The Rutland Psalter', 1260. Source: British Libary

the 6th century. After the retreat of the Romans, Germanic tribes also settled in the Alpine region. There were many different tribes and nations of Germanic peoples, some of which are reflected in the names of modern nations or provinces. For example, the Franks founded modern France, the Alamanni in southern Germany gave Germany the French name Allemagne, and the Bajuwarians and Lombards live on in names like Bavaria and Lombardy. All this brought significant changes to the Alpine region in political and economic terms.

Textile production in Late Antiquity and the Early Middle Ages was primarily based on traditional methods and techniques. It was often a cottage industry, with textile production in households or small workshops. The production process of wool involved various stages, including spinning, weaving and dyeing of the fibres.

Local cultural and regional factors influenced textile production during this period. It was often linked to subsistence agriculture and served the needs of local communities. Textile production provided clothing, household items, and trade goods for the local economy. As the Middle Ages progressed, more urban centres and trade routes developed, leading to the growth of textile production in certain areas.

Various sources from Late Antiquity and the Early Middle Ages offer evidence of a highly developed textile industry in the Roman provinces. There were organized groups of weavers and textile merchant, as well as the established state-controlled textile manufactories called *gynaeceums* from the 4th century AD onwards; they were run by state officials and staffed, at least initially, by state-enslaved people. Additionally, personal careers were built around textile production. During this period, the first textile industry emerged in addition to specialised workshops.

Imperial factories for manufacturing woollen and linen cloth (*gynaecea* and *linyphia*) and dyeing (*baphia*) were established in numerous cities in Italy and elsewhere. Somewhat different from gynaeceas were workshops on large estates – royal, aristocratic or ecclesiastical. Monasteries, in particular, became important centres for producing wool and fabrics. They had their pastures and workshops where monks and commoners helped prepare wool and made cloth for their needs and sale. However, the gynaecea disappeared around the 11th century, when textile production moved to cities.

Trade in wool and woollen products existed but was limited primarily to local and regional markets, as the demand for such trade was small and traders had to contend with great difficulties. Although the Romans had left a sound road system in the Alps, migrations and the wear of time had caused the Roman roads to deteriorate, so Alpine travellers often complained about bad roads. Also, long trade routes were less reliable due to unstable political conditions.

WOOL PRODUCTION IN MONASTIC COMMUNITIES IN NORTHERN ITALY

Textile production remained important for the local economy during this period; however, the organisation of production shifted towards smaller, decentralised production, often centred around monastic communities. Monasteries were crucial in preserving and passing on textile production skills. The monks and nuns produced textiles for their use and trade. Several monastic communities in northern Italy played a significant role in producing woollen textiles during this period, thus contributing to northern Italy's economi development as well as its spiritual and intellectual life.

Monasteries were the original centres of manufacturing industry in the 8th and 9th centuries, producing fabrics, salt, wood, and iron. Within a few hundred years, the monasteries became major wool merchants, and the demand for their woollen fabrics was high due to their exceptional quality. An example of an important large monastic estates in north-central Italy that was active in textile production was St Giulia/San Salvatore near Brescia.

St Giulia had about sixty separate villas or manors; most were built in the northern plain of Italy near Brescia, while others were located within the mountains that overlook the town. The possessions of St Giulia were immense, including more than 3500 head of livestock. Rent was paid with wool, so the monastery of St Giulia received many fleeces from its estates. In the 9th to 10th centuries, the urban monastery of S. Giulia owned important lands in Val Camonica, which were almost exclusively used for sheep farming. Documents from the monastery show that the most significant quantities of fleece, wool, and cheese came from this area. The 85 tenants of one estate alone, Bradellas, owed an annual rent of 86 cheeses and 67 fleeces, as well as 85 sheep and one lamb per year.

Wool, a vital commodity for the monastery, was likely spun and woven in its gynaeceum, where women, probably servants, processed fibres and created fabrics. Much of the wool produced was sold in markets, supporting the local economy and supplying regional towns. The significance of wool in the area is evidenced also by the existence of wool workers' guilds in Brescia, dating back to the Roman period.

Several monastic communities, such as those in northern Italy, were known for their economic activities, which included agriculture and crafts such as weaving. However, this monastic dominance in production did not last. From the 10th to the 12th century, production shifted from

The Santa Giulia and San Salvatore churches in the Museo di Santa Giulia complex in Brescia. Source: Wikipedia

peasant workers in the monasteries to specialised workers in the urban centres. Nevertheless, the early dominance of monastic estates in the manufacturing industry is evidence of their ability to generate greater agricultural surpluses than other types of estates.

2.1.4. MEDIEVAL PERIOD

The wool and linen industry was a vital economic sector in the Middle Ages (800 AD – 1500 AD), alongside mining and metallurgy. Sheep farming was central to the Alpine economy, given that Alpine regions, with their suitable conditions for sheep grazing, produced wool that met the demand for warm, durable textiles necessary for the rugged terrain and colder climate. Woollen cloth production, including both coarse and fine fabrics, was integral to the local economy.

Madonna Spinning, Church of St Primus, Sv. Primož nad Kamnikom, 1507. Source: Narodna galerija

This dynamic industry saw significant technological advancements from the 11th to the 15th century, comparable to the Industrial Revolution's impact in the 18th and 19th centuries. Innovations included the transition from vertical to wide horizontal looms, allowing the production of broader fabrics. By the 15th century, the main stages of cloth production were established, which followed the same phases as modern production. Wool was usually sheared from the sheep and then processed in various stages, including cleaning, carding, spinning and weaving. Spinning wheels and looms were commonly used for these processes.

Overall, textile production developed considerably, with different levels of organisation depending on the environment. In the rural areas of the Alps, for example, craft activities were part of a predominant subsistence economy that combined labour on the land, livestock breeding, and other domestic tasks. Later, there were also consolidated workshops where production occurred in one place. This type of production was characteristic of various types of manufacturing, particularly in the textile industry, including workshops (*fabrique*) and craft workshops (*manufacture*).

Two important changes in the scale and organisation of production took place towards the end of the Middle Ages. First, the volume of manufactories increased many times, and second, the manufacturing processes increasingly passed into the hands of specialists for whom their craft was their only way of earning a living. This also meant establishing interest groups such as textile guilds or associations, which played a decisive role in regulating and maintaining quality standards in textile production. These guilds laid down guidelines for production, ensured fair practices, and protected the interests of textile workers and merchants.

Coat of arms of the guild Arte della Lana from Florence, 1487. Source: Wikipedia

Guilds retained power for many centuries. Guilds weakened in Switzerland only in the late 17th century and the early 18th century in France. In the case of other parts of Europe, guilds maintained their powerful role until the late 18th or even early 19th centuries.

The increasing specialisation in textile manufacturing brought with it a growing volume of production, which continued to expand from the 10th or 11th century until the 14th century. It then suffered a setback, rising again in the 15th and 16th centuries.

During the Middle Ages, some towns known for their links with the textile industry began to develop a flourishing textile production. Milan, Como, and Bergamo were known for their textile production in Lombardy during this period; some of towns remained important centres of textile production in the Alps until the 18th and 19th centuries.

Books of the Mendel and Landauer Twelve Brothers Guilds also show textile crafts. Around 1425. Source:Die Haüsbucher der Nürnberger Zwölfbrüderstiftungen

By the 15th century, wool-working had spread widely to numerous rural centres, especially in foothills and low-alpine areas. These areas boasted a significant availability of raw materials, hydraulic energy, and lumber, all of which were essential for textile production.

Another significant textile centre was Val Gandino, a side valley of the Val Seriana in the province of Bergamo, where the earliest data of wool processing date back to the 11th century. There, the wool of an indigenous local breed, the large Bergamo sheep, was used to make personal clothing, which from the 14th century was linked to the clothing produced for the Humiliati religious congregation.

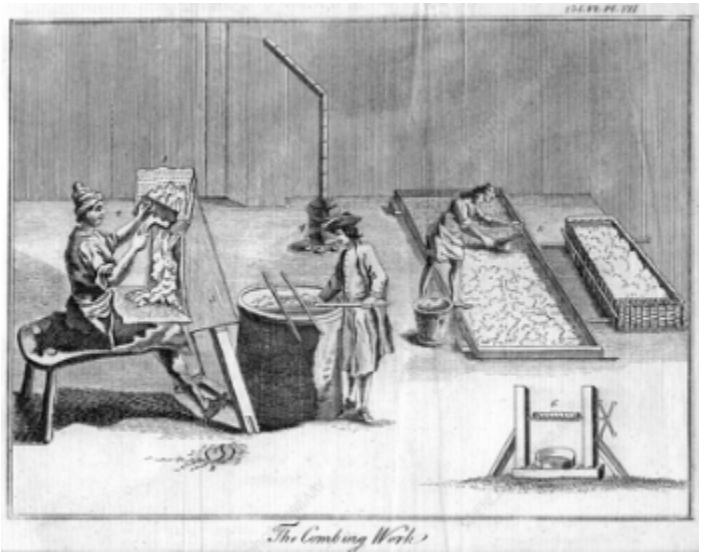
Biella, located in the Piedmont region in northwest Italy, was also an important centre for textile production at the time. From the 11th century onwards, as the textile industry gained importance, the northern Italian region was considered more important and became the centre of most textile-related activities.

Italian cities, led by Venice, Florence, Genoa and Milan, had an overwhelming predominance in medieval and early modern European trade, both in cloth production and the cloth trade, from the 13th to the 16th century.

"LOMBARDESCHI" TEXTILE PRODUCTION

In the 12th and early 13th centuries, *Lombardeschi* textiles dominated the Italian market, producing woollen and mixed fibre cloth for export. In the 14th century, towns such as Milan and Como specialised in high-quality woollen cloth. At the same time, Milan, Monza, Pavia and Brescia produced large quantities of mediocre quality, while Lecco and Bergamo concentrated on low-quality fabrics. The Visconti state played a decisive role in promoting Milan's market dominance. Milan's merchants established a monopoly on the import of high-quality English wool (*lana francesca*), by far the finest and therefore most expensive of the short-fibre wools, well into the 16th century by controlling the transalpine routes and securing trading licences from the French king.

By the end of the 14th century, a corporation of Milan's of high-quality wool comprised around 300 companies, and the number of registered companies increased in the second and third decades of the 15th century. The opening of the Iberian wool market and the decline in Florentine production around 1414 boosted wool production in the Lombard cities, even in cities where the production of woollen cloth had previously been insignificant, such as Cremona, Pavia and Lodi.



Textile workers combing or carding wool. 18th century Source: Maggie Blanck

In the 15th century, the Milanese woollen industry experienced a decline due to the rigid attitude of the guilds and competition from exporting merchants. This increased the tendency to move production to outlying towns and municipalities near cities such as Vigevano, Soncino, Canzo and Novara, where production costs were lower and guild controls were less strict. Upper Brianza also developed into a vital textile centre, benefiting from the growing population and its strategic position at the foot of the mountains.

REDISCOVERING LOCAL RAW MATERIALS

In the towns of late medieval Italy, wool processing absorbed considerable industrial investment. It provided a livelihood for thousands of families, often with all members, including the youngest, engaged in production. Wool processing was the most important industry in north of

Italy, fuelled by a diverse demand ranging from fabrics for mass consumption to luxury textiles. Unlike cotton and silk, which relied on imported materials, wool production utilised local resources and traditional techniques.

Northern Italian cities, particularly in Lombardy, began to produce wool for export markets in the 12th century. The development of luxury cloth production was closely linked to the introduction of superior English wool, especially from the Welsh Marches and the Cotswolds, which was considered the finest until the 16th century. Although Italian producers knew this wool earlier, it was not widely used until the mid-14th century. The monopoly over the raw materials and the production of higher quality goods was so great that there were restrictions on where artisans could use English wool.

Aspects of daily life (Wool clothing) depicted in 14th-century illuminated manuscripts from Italy. Source: Wikipedia

Formerly well-known centres of luxury goods production, such as Florence, Milan and Verona, joined the Veneto region in the mid-14th century following the renewal of textile production, probably facilitated by Florentine specialists. While elsewhere, English wool was strictly prescribed for the production of luxury cloth; legislation in Verona and Vicenza permitted the use of English wool for high-quality cloth and local wool (*lane nostrali*) for the finest products. This shift was partly due to the difficulties in obtaining English wool and the availability of high-quality local wool. Towards the end of the 15th century, guild documents and market prices in Vicenza showed that local wool from Padua, Mantua and Verona was considered comparable, if not finer, than English wool. The production of luxury fabrics in Veneto remained considerable throughout the 15th century, regardless of the origin of the wool.

2.1.5. EARLY MODERN PERIOD

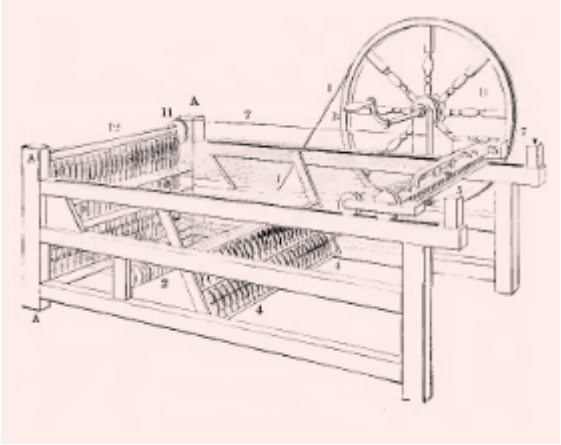
During the late early modern period (1500 AD - 1800 AD), textile production in the Alpine regions underwent significant developments and changes. The region's abundant natural resources, including the wool of local sheep, played a crucial role in the growth of the textile industry. It was a time of transition in the textile industry, during which many of the features of the more modern textile industry were introduced. However, textile production in many rural Alpine areas was still mainly carried out in households under a cottage industry system. Families, especially women and children, were engaged in spinning, weaving, and other textile-related tasks, working with materials they found locally. Vast quantities of textiles were produced locally for daily use in very local markets.

The spinning of fibres (such as wool) and the weaving of fabrics were mainly done by hand, using traditional techniques and equipment. Hand-spinning wheels and hand looms were standard tools. In the 15th century, spinning was greatly simplified by the invention of the spinning wheel. The device made the hand-operated spindle superfluous, allowing more yarn to be spun in less time. Two-handed spinning wheels were introduced at the end of the 17th century. The wheel was turned with a treadle operated with the foot so that both hands were free for spinning. In poorer families, members often worked in shifts to keep the wheel in constant motion, which significantly improved their ability to earn a living. Towards the end of the 16th century, technical improvements led to the use of horizontal looms, which replaced the vertical ones with warp threads. The new looms were easier to handle and made production possible.

In the later phases of the period, especially in the late 17th century, industrialisation and mechanisation changed textile production considerably. Introducing looms and other machinery revolutionised the industry, increasing efficiency and production volumes. Several technological innovations revolutionised the production of woollen

fabrics. Three innovations that significantly changed textile production. The first was the flying shuttle, which was invented by John Kay in 1733 and enabled more expansive production of fabrics by speeding up the weaving process. The second was the spinning jenny, invented by James Hargreaves in 1764, which enabled multiple threads to be spun simultaneously, thus increasing production rates. The third was the use of water-powered mills for spinning and weaving, which increased the capacity and efficiency of woollen fabric production.

For the textile industry, the 17th and 18th centuries can be seen as a time of greater transition than most. It was a time of experimentation that eventually led to the products and production methods of the modern era. During this period, the types of products multiplied, the techniques used to produce them diversified, trade became more extensive due to the expansion of the market and the need for trade, and specialisations became more geographically concentrated.



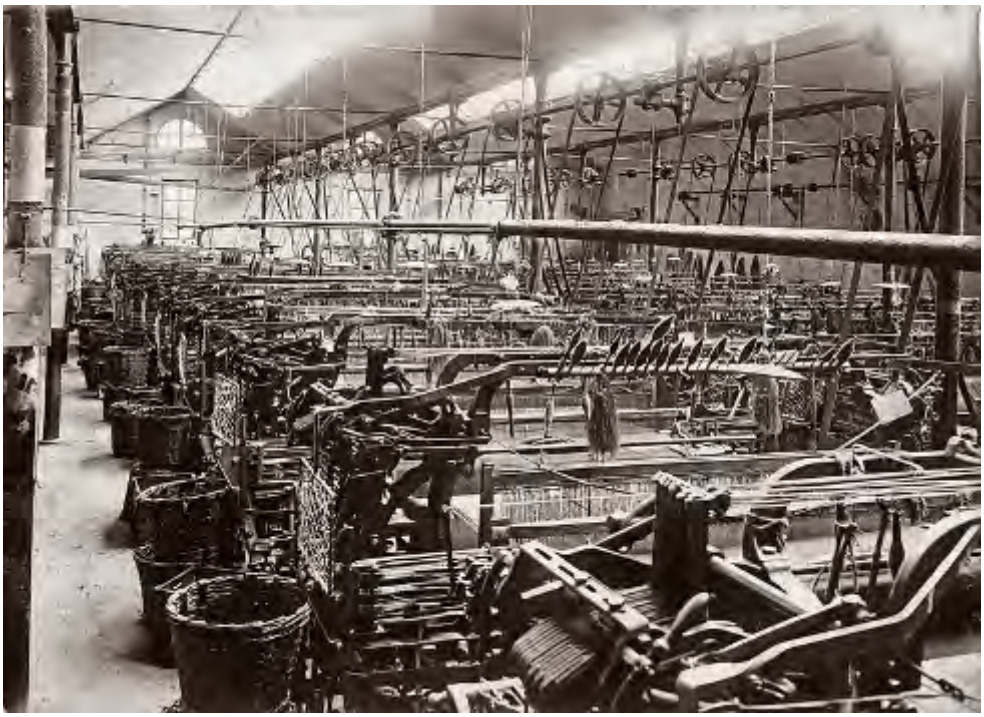
The spinning jenny is a multi-spindle spinning frame, and was one of the key developments in the industrialisation of textile manufacturing during the early Industrial Revolution. Source: Wikipedia

With the advent of industrialisation, textile production shifted from craft workshops to factories. Urban centres with access to transport routes and waterways became textile production centres. This led to a concentration of textile factories and the growth of industrial towns in the Alpine region.

In the late early modern period, the production of woollen fabrics was concentrated in various centres in the Alpine region. In France, for example, there were important wool production and weaving centres in the Alsace region, while in Italy, cities such as Venice and Milan were known for their wool textile production with specialised techniques and high-quality fabrics. But these were also difficult times for the wool industry. So, some towns in the old textile regions of Italy, which were in difficulty, turned to entirely new products such as silk fabrics and other luxury textiles.

Textile products from the Alpine regions were in demand locally and in regional and international markets. For example, in the 16th and 17th centuries, Cremona and Como, whose main markets for their woollen products were not in Italy but in Germany and Switzerland. Trade routes and merchant networks were decisive in distributing and exchanging textiles, promoting economic growth and cultural exchange.

Although short-stapled English wools continued for some time to be the essential raw material for most high-quality woollens, many continental draperies increasingly mixed with them their domestic short-staple



Industrialization and modernization strongly marked this historical period. Source: Wikipedia

wools, especially those from Spain and Scotland. The decline in the qualities of most English short-stapled wools during the mid-to-late 16th century, when Spanish merino wools were improving, was to prove decisive in determining the future leaders of the heavy woollens industry.

Data from the 17th century show that there were more sheep than cattle on the territory of Slovenia. Sheep farming even began to increase in the 18th century yet lost its former importance in the 19th century. This significant change was mainly due to the gradual predominance of stable cattle over grazing cattle in the 18th century. Many factories in alpine region, also in Slovenia, imported wool from Australia and South America, which competed with domestic wool from the end of the 19th century. However, with the mechanisation of the production chain and the concentration of production activities in factories, the wool industry experienced a revival in some parts of the Alpine region in the end of 18th century, such as Gandino, supported by the arrival of foreign investors, especially from Switzerland and based on the use of local and imported wool (Veneto, Romagna, Puglia, Hungary, Russia, Levant, Australia).

PROTOINDUSTRIALISATION IN BAYERN

The historical forerunner of industrial textile production can be found in what is now Bavaria, where a partly mercantilist-led manufacturing system developed in the late 17th century in the wake of proto-industrialisation. Towards the end of the 18th century, this system underwent significant expansion with numerous new businesses. These large-scale, centralised, and capital-intensive production units still relied on manual labour for their production steps but also used partially mechanised machines such as the spinning jenny to a certain extent. They remained closely linked to a decentralised system of homework, which was often integrated into the production process. The products, usually destined for export, were either marketed and distributed via an extensive publishing system. In the publishing system typical of the early modern economy, a publisher collected the products made by home labour and then marketed or distributed them. The publishers often provided raw materials and even looms and occasionally paid the wages for the home labour in kind.

Textile manufactories were usually established in towns or regions with a long tradition of textile craftsmanship. In Bavaria, textile manufactories were spread across the entire area. Still, they were mainly concentrated in Middle and Upper Franconia – in the principalities of Ansbach and Bayreuth – and Swabia and the Palatinate.

The Coalition Wars, which began in 1792, with all their turbulence, had a considerable impact on the economic success of these manufactories. Several production sites suffered from the interruptions caused by the war, which severely restricted export opportunities abroad. In its interests, France completely sealed off the Italian market, to which many manufactories from Franconia and Swabia had previously exported with great success. On the other hand, most textile manufacturers benefited from the Napoleonic continental system, which had eliminated the superior English textile industry as a competitor since 1806.

RECYCLING MENTALITY IN 18. CENTURY

In pre-industrial times, everyday commodities were more valuable than people's income. Combined with poverty and recurring economic crises, this encouraged thrifty behaviour and extended the life of goods through reuse, resale, and recycling. Such practices were central to the working poor and widespread in society's middle and upper classes, as evidenced by historical sources such as account books and letters.

The high material value of goods and the low relative price of labour led to extensive structures for repair, resale, and recycling. Many craftsmen were engaged in repair work, waste collectors were ubiquitous, and there were numerous second-hand goods dealers. In addition, there were

special marketplaces in larger cities for second-hand goods and related services.

Textiles, especially clothing, were precious. Their lifespan was often extended through reuse, reworking, and repair. Items of apparel circulated within households and were traded at urban second-hand markets. Clothes that could no longer be worn or mended were often recycled. The garments were cut up for new clothes, mending, or various household purposes, such as cleaning. Rags were a coveted resource that were important for papermaking until the late nineteenth century. Even small fabric scraps were valuable and could be sold or traded to scrap collectors.

Studies of Western Europe have highlighted the high value of clothing in pre-industrial times, especially for the working poor. For example, in late 18th century Vienna and Salzburg, the cost of clothing was considerable. A man's clothing could cost 23–42 guilders, the equivalent of 50–100 days of labour for an unskilled worker. In Salzburg, a modest jacket costing 15 guilders required almost 60 days of labour. Even in the middle class, clothing costs could account for up to a third of the household budget.

People often tried to reduce expenditure on clothing by extending the life of garments and buying second-hand clothes. Second-hand clothing allowed people to dress fashionably or respectfully. Used garments were refurbished, recoloured or restyled to match current fashion trends, making them desirable. Middle and upper-class consumers also participated in the secondary markets and bought valuable second-hand clothing. Textiles often served as an alternative currency, which was used as a direct payment or a partial exchange for new goods. Inventories from the late eighteenth century in Salzburg document the considerable value of clothing, which was sometimes higher than the amount that could be worn, suggesting a non-monetary savings strategy.

There were two primary forms of second-hand textile exchange: private transfers (estates, thefts, gifts, and donations) and commercial outlets. Private transfers often resulted in items entering the second-hand market, while commercial outlets facilitated the broader circulation of second-hand textiles.

The weavers' uprising in 1844 had a strong impact on the textile sector and debate about workers reights acros Germany of the time. Source: Lemo

2.1.6. THE LONG NINETHEENTH CENTURY

From the early 1800s, the introduction of mechanical aids in wool production led to significant innovations. This era saw the construction of specialised industrial buildings for different stages of the wool production process – or sometimes the entire process. The 19th century saw the wool industry in the Alpine region transform with mechanised spinning mills and weaving technologies, increasing efficiency and output. There was a rise in sheep farming and wool processing factories due to local demand and competition with other European producers.

This growth led to the birth of numerous wool production centres across the Alpine region, including the local mechanical-textile sector in Biella, earning it the nickname "Manchester of Italy."

Strong trade networks connected local producers with major European markets, facilitating the export of high-quality woollen textiles. The industry faced competition from cheaper wool imports, synthetic fibres, and diseases affecting sheep. The Alpine wool industry focused on high-quality production and niche markets to maintain its reputation for quality craftsmanship. The 19th century was a time of significant growth and change for the wool industry in the Alpine region, driven by industrial advancements, expansion, and strong trade networks despite various challenges.

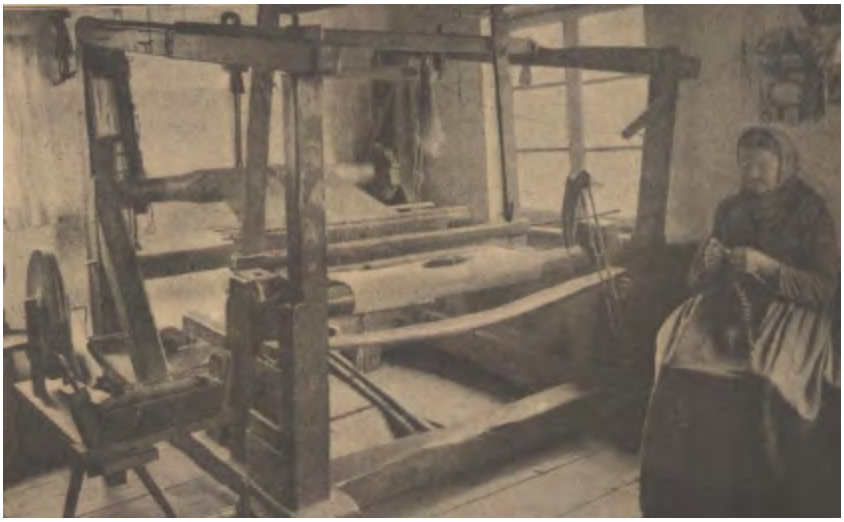
ALSACE

At the beginning of the 19th century, Alsace had become one of Europe's most densely populated regions. This population pressure led to low agricultural productivity and a declining standard of living despite improvements in intensive farming and a reduction in pastureland. In the second half of the century, labour-intensive industries emerged in which the family labour force of peasant households – especially women and children – sought additional income. This influx of cheap labour from the ever-shrinking peasant households boosted the local economy and led to more significant investments in human skills and education.

In 1871, Germany annexed Alsace-Lorraine, a strategically important region on the Franco-German border. The primary industry in Alsace was textile production, and companies there were far more advanced than their German counterparts, which still relied heavily on manual equipment. This disparity worried the German textile factories, which could not compete with the highly industrialised Alsatian industry. German manufacturers lobbied for protection from Alsatian competition, arguing that the abolition of tariffs between Germany and France was the only practical solution. From 1872, raw materials from France were allowed to be imported into Alsace-Lorraine with minimal customs duties.

The annexation of Alsace-Lorraine proved beneficial for Germany as it stimulated the rapid growth and industrialisation of the textile sector.

Alsatian weaver. Source: Wikipedia



Weaving production in Alsace tripled between 1870 and 1910, while the spinning sector doubled between 1870 and 1890. This considerable increase in production required greater imports of raw materials. The cotton shortage caused by the American Civil War had already prompted German textile producers to reconsider their dependence on cheap cotton and to look for alternative sources of raw materials.

In summary, the transformation of Alsatian wool production in the 19th century was characterised by the region's ability to adapt to

demographic pressures through industrial innovation and the strategic integration of family labour. The annexation by Germany further accelerated industrialisation and made Alsace an important hub of the European textile industry.

WOOL PRODUCTION IN WÜRTTEMBERG DURING THE 19TH CENTURY

Today, Baden-Württemberg is home to approximately 200 textile and clothing companies employing around 24,000 people. These companies primarily operate in technical textiles, clothing, and home textiles. The region's value chain is almost entirely covered, including textile machinery, textile chemistry, and extensive distribution networks.

Historically, this area has also been significant for textile production. The wool textile industry was the earliest and most crucial proto-industry in Württemberg, centred in the Nagold Valley. Towns like Wildberg and Ebhausen developed export-oriented wool textile industries during the late medieval and early modern periods. This growth was facilitated by the proximity of the sheep-raising Heckengäu region, which provided raw wool, to the Nagold River, which supplied energy and water for fulling mills and dyeing shops. By the 16th century, the region had a thriving woollen broadcloth and worsted industry, making it one of the most vital industrial areas in present-day southern Germany.

In the 19th century, the Württemberg wool industry saw significant growth and transformation. However, the first half of the 19th century witnessed a decline. This was not due to the local worsted weavers being displaced by the factories, as hand weaving remained competitive with factory weaving in woollen textiles in Württemberg until the late 19th century. Even in 1850, mechanical woollen looms were scarce. The crisis led to state interventions, such as those by the Central Welfare Association, which promoted alternative cottage industries by encouraging the spinning of combed yarn, embroidering, and straw-plaiting, and provided social support like soup kitchens and vocational training.

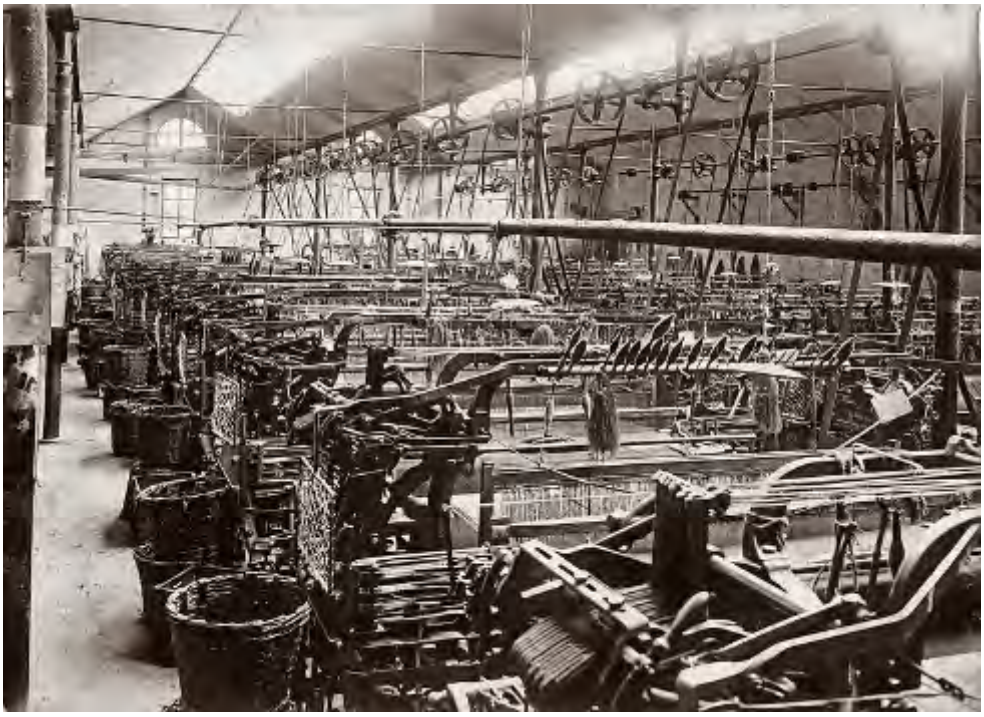
Historical industrial weaving loom, textile museum at Laichingen, Swabian Alb, Baden-Wuerttemberg, Germany. Source: lookphotos

These government initiatives likely mitigated the crisis's impact, delaying the decline of the worsted industry in the upper Nagold Valley. Worsted weaving was still practised in Wildberg in 1862 and employed five independent masters, 16-18 assistants, and around 80 spinners. The weavers in Wildberg mainly produced woollen sailor's gloves (which were exported to Holland, England and America), sieve cloth, cartridge cloth, molletons (multon), and flannels.

Despite these challenges, Württemberg sustained a robust wool industry through continuous adaptation and improvement. The region's industrialisation was marked by the enduring dominance of handicraft production and a late shift towards the factory-based sector, which gained momentum in the last quarter of the 19th century.

2.1.7. FROM THE TWENTIETH CENTURY ONWARDS

At the beginning of the 20th century, wool production in the Alpine regions remained largely traditional. Sheep farming was widespread, especially in the mountain regions where the terrain was suitable for grazing. Wool was still an important part of the local economy in some areas and was used to make clothing, blankets



The fabric mill Vitale Barberis Canonico in the 1940s. Source: Wikipedia

and other textiles. Hand spinning and hand weaving were widespread, and many families produced woollen goods for their own use and for local markets.

Both the First and Second World Wars had a significant impact on the woollen industry. The wars disrupted agricultural activities and trade, which led to shortages of raw materials and labour. Reconstruction after the war led to a temporary upturn in wool production as part of the broad-based agricultural recovery programmes.

The emergence of synthetic fibres such as nylon and polyester posed a major challenge for the wool industry. Synthetic fibres were cheaper to produce and offered desirable properties such as durability and ease of care. As a result, the demand for wool declined and many traditional wool producers struggled to survive in the market.

Towards the end of the 20th century, interest in natural fibres, including wool, revived. This was driven by niche markets focussing on sustainability, organic farming and high-quality artisanal products. Wool from the Alpine regions, known for its quality, found a market among consumers looking for luxury and eco-friendly options.

In the 21st century, more and more emphasis is being placed on sustainability and eco-friendliness. Wool, a natural and biodegradable fibre, has benefited from this trend. Modern technological innovations have improved the processing techniques for wool, enabling more efficient production of high-quality wool products. Research and development in the textile industry has led to the development of new wool blends and treatments that improve the properties of the fibre, such as softness, durability and resistance to shrinkage.

Wool is now used in a variety of products that go beyond traditional clothing and textiles. These include insulation materials, eco-friendly packaging and even components in the high-tech industry. Wool's versatility has helped it remain relevant in a rapidly changing market.

The focus on high-quality, handcrafted wool products continues to grow. Consumers are increasingly willing to pay a premium for products that are sustainably produced and have a strong cultural heritage.

Cultural heritage organisations and local governments began to support efforts to preserve traditional wool processing techniques. Festivals, workshops and museums dedicated to wool production attracted tourists and educated the public. The cultural heritage of wool production in the Alpine regions is preserved and celebrated. This also

Ovčarski bal or sheeps ball is one of the oldest ethnographic events in Slovenia. Source: Jezersko info

includes the continuation of traditional festivals and the promotion of wool tourism.

WOOL AS A PROBLEM

Today, according to European legal framework, wool falls into the category of particular waste, which, as such, requires specific treatments to reduce the bacterial load of pathogens that could cause health problems and environmental pollution. Before 2002, when wool was first categorised as an agricultural by-product by the European Commission, it was an economic source of income for companies. However, with strict EU regulations, wool became a by-product of animal origin or waste material subject to strict regulations.

Since the 1970s, wool has lost value, impacting the breeding of certain sheep breeds. For example, the breeding of Bergamasco sheep has increasingly focused on meat production.

Unwashed sheep's wool. Source: Soven

The question of wool's usefulness is complicated because wool is a by-product with a very low economic value. If the wool is not further processed, it is considered organic waste. The problem is complex, and various factors, conditions and circumstances influence its solution.

Despite its legislation, the EU has repeatedly opted to allocate European funds for the promotion and use of wool in various forms. Therefore, despite a regulation that classifies dirty wool as an agricultural by-product at the European level and effectively penalises its use, there are entrenched practices that go in exactly the opposite direction, that of recycling and valorising wool. Adapting European legislation would not only be an appropriate way to recognise wool as an agricultural product: more than many small-scale projects at the local level could or can do, a change in legislation would indeed have a positive cascading effect on the large-scale wool supply chain.

By revitalising the use of wool and increasing people's awareness of a more sustainable way of living and using local and natural materials, there is a renewed interest in local wool. This not only promotes local economies but also has significant environmental benefits. There are a number of local/regional initiatives aimed at restoring the supply of local

Using sheep's wool for composting. Source: KGZ Nova Gorica

wool, improving fibre quality and adding value to this local material by using wool for high-quality products for household and personal use, thereby reducing our carbon footprint and promoting a more sustainable future.

SOURCES:

Baker, P. 2000. Society and economy in northern Italy in the early Medieval period (c. 6th-11th centuries AD.): A zooarchaeological study. London: University of London, University College London, UK. ProQuest Dissertations Publishing. Available at: https://www.proquest.com/docview/1924923171?pq-origsite=gscholar&fromopenview=true&sourcetype=Dissertations%20&%20Theses

Braudel, F. 1988. Strukture vsakdanjega življenja: Mogoče in nemogoče: Materialna civilizacija, ekonomija in kapitalizem, XV. - XVIII. stoletje. Ljubljana: Založba ŠKUC, Znanstveni inštitut Filozofske fakultete.

Braudel, F. 1989. Igre menjave: Materialna civilizacija, ekonomija in kapitalizem, XV.-XVIII. Stoletje. Ljubljana: ŠKUC, Znanstveni inštitut Filozofske fakultete.

Cevc, T. 2005. Die Käseherstellung auf den slowenischen Almen im Lichte archäologischer und historischer Forschung. Rudolfi num. Jahrbuch des Landesmuseums Kärnten, 301–308.

Cevc, T. 2006. Človek v Alpah: Desetletje (1996-2006) raziskav o navzočnosti človeka v slovenskih Alpah. Ljubljana: Založba ZRC, ZRC SAZU.

Cerwinka, G. and Mandl, F., eds. 1996. Dachstein: Vier Jahrtausende Almen im Hochgebirge 1. Mitteilungen der Anisa 17. Haus im Ennstal.

Dijkman, J. 2011. The fabric of society: The organization of textile manufacturing in the Middle East and Europe, c. 700 – c. 1500. Available at: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=XVcS2DMAAAAJ&citation_for_view=XVcS2DMAAAAJ:MXK_kJrjxJIC

Enciclopedia dell' Arte Medievale. Available at: https://www-treccani-it.translate.goog/enciclopedia/tessuto_(Enciclopedia-dell'-Arte-Medievale)/?_x_tr_sl=auto&_x_tr_tl=en&_x_tr_hl=sl&_x_tr_pto=wapp&_x_tr_hist=true

Franceschi, F. 2016. Woollen Luxury Cloth in Late Medieval Italy, in Europe's Rich Fabric: The Comsumption, Commercialisation, and Production of Luxury Textiles in Italy, the Low Countries and Neighbouring Territories (Fourteenth-Sixteenth Centuries), Farnham-Burlington, Ashgate, 181-204.

Feyer, U., 1973. Die Anfänge der Industrie in Baden-Württemberg 1829, 1832. Kommission für Geschichtliche Landeskunde in Baden-Württemberg.

Gamberini, A. 2015.A companion to late medieval and early modern Milan: The distinctive features of an Italian state. Brill. Available at: https://doi.org/10.1163/9789004284128

Gleba M. and Mannering U. (eds.) 2012. Textiles and textile production in Europe: From Prehistory to AD 400, Ancient Textiles Series, vol. 11, Oxbow Books.

Gostencnik, K. 2013. Textile production and trade in Roman Noricum. In: M. Gleba and J. Pásztokái-Szeőke (eds.), Work and Identity: The agents of textile production and exchange in the Roman period. Archaeological Textiles Series 13, Oxford – Oakville 2013, 60-86.

Grömer, K. 2016. The Art of Prehistoric Textile Making: The Development of Craft Traditions and Clothing in Central Europe. Wien: Naturhistorisches Museum. Available at: https://library.oapen.org/handle/20.500.12657/32825.

Industrielle Erfolgsgeschichten aus Württemberg. 2015. Available at: https://museumsverband-bw.de/wp-content/uploads/2021/10/Ausstellungskatalog_Textile_Vielfalt.pdf

Jenkins, D. (eds.) 2003. The Cambridge History of Western Textiles, Volume 1. Cambridge, U.K.; New York: Cambridge University Press.

Harlow, M. (ed.) 2018. A Cultural History of Dress and Fashion in Antiquity. London: Bloomsbury Academic.

Heller, S.-G. (ed.) 2018. A Cultural History of Dress and Fashion in the Medieval Age. London: Bloomsbury Academic.

Hoffmann, J. W. 1923. The Commerce of the German Alpine Passes During the Early Middle Ages. Journal of Political Economy 31 (6). Available at: https://doi.org/10.1086/253565

Horvat, J. 2020. Arheološke sledi v slovenskem visokogorju = Archaeological traces in Slovene mountain areas. In: Ogrin Marija et al., Življenje v Alpah: Življenje v Alpah nekoč in danes - od prve obljudenosti visokogorskega sveta pred več tisoč leti do trajnostnega razvoja turizma danes: Zbornik posveta 6. oktobra 2017 v Stari Fužini v Bohinju. Bohinjska Bistrica: ArheoAlpe, zavod za kulturo, izobraževanje in turizem Bohinj; Stara Fužina: Turizem Bohinj.

Kaczmarek, Z. 2017. Textile production and consumption in Roman provinces and in free Germania – a 21st century perspective. Studia Europaea Gnesnensia 16(16). https://pressto.amu.edu.pl/index.php/seg/article/view/30079.

Kelley, A. C. 2023. Searching for Professional Women in the Mid to Late Roman Textile Industry. Past & Present 258 (1): 3–43. Available at: https://doi.org/10.1093/pastj/gtac007

Mocarelli, L., 2009. When the mountain serves the City: The production of cheese and wool in eighteenth-century Bresciano (Italian Alps). *Nomadic Peoples*, *13*(2), pp.160-170. Available at: https://www.researchgate.net/publication/233514937_When_the_Mountain_Serves_the_City_The_Production_of_Cheese_and_Wool_in_Eighteenth-Century_Bresciano_Italian_Alps.

Munro, J. H. A. 2011. The Rise, Expansion, and Decline of the Italian Wool-Based Textile Industries, 1100-1730: A study in international competition, transaction costs, and comparative advantage.

North, C. M. and Carl R. Gwin. 2010. Religion and the Emergence of the Rule of Law In: Religion, Economy, and Cooperation: DeGruyter, 127-155.

Ogilvie, S., Küpker, M., and J. Maegraith. 2009. Community Characteristics and Demographic Development: Three Wurttemberg Communities, 1558-1914. Available at: https://doi.org/10.17863/CAM.5393

Sabatini, S. and Bergerbrant S. (eds.) 2019. The Textile Revolution in Bronze Age Europe. Cambridge: Cambridge University Press.

Selling Textiles in the Long Eighteenth Century: Comparative Perspectives from Western Europe

Stobart, J. and Blondé, B. (eds.). Available at: https://books.google.si/books?id=2qPu1W5ViEAC&pg=PA19&lpg=PA19&dq=biella+wool+early+middle+ages&source=bl&ots=BF9Ko3rq-u&sig=ACfU3U3s_Y6m1VA2cqGe5i6xG9Ol7js-jg&hl=en&sa=X&ved=2ahUKEwjZy9XPhIOGAxWMiv0HHXr2Cc44FBDoAXoECAMQAw#v=onepage&q=biella%20wool%20early%20middle%20ages&f=false.

Textiles and clothing in Baden-Wuerttemberg. 2024. Available at: https://www.clusterportal-bw.de/en/cluster-data/technology-fields/technology-fields-detail/textil-und-bekleidung/clusterdb/Innovationsfeld/show/

Varanini, E. D. 2012. Allevamento, transumanza, lanificio: tracce dall'alto e dal pieno Medioevo veneto. Available at: https://mpra.ub.uni-muenchen.de/11038/1/MPRA_paper_11038.pdf

Verhulst, A. E. 2002. The Carolingian economy. New York : Cambridge University Press.
Volkswirtschaftsdepartment, S.E., 1925. Volkswirtschaft, Arbeitsrecht und Sozialversicherung der Schweiz.

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2.2. FROM SHEEP TO WOOLLEN FABRIC

Sheep provided a “renewable raw material” for textile production. However, numerous steps are required to process them. The journey from sheep to woollen fabric is a fascinating and complicated process that nowadays combines traditional craftsmanship with modern techniques. It begins with sheep breeding, where the breed and the care of the sheep determine the quality of the wool. The wool is then sheared, cleaned, and carded to prepare the fibres for spinning. Spinning transforms the wool into yarn, then woven or knitted into fabric. Each step requires meticulous attention to ensure the production of high-quality woollen textiles. This chapter uses case studies to illustrate the working steps, highlighting the techniques that have shaped wool production over the centuries.

2.2.1. SHEEPS

Sheep farming for wool has been important in the Alpine region for centuries and was closely linked to the development of the textile industry and the needs of local communities. Wool has been an essential natural resource in the Alpine region. Sheep breeding for the production of wool has existed since the Bronze Age.

However, with industrialisation and technological advances in the textile industry in the 18th and 19th centuries, sheep farming for wool underwent significant developments. The increasing demand for wool for the rapidly growing textile industry fuelled the expansion of sheep farming and the improvement of breeds for producing quality wool.

Mountain grazing, closely linked to sheep farming in alpine areas, is an ancient microcosm that still has a strong identity today. Livestock farming benefits from grazing for the well-being of the animals, which spend time at high altitudes, and for the high quality of the meat and milk produced by grazing on mountain pastures.

Merino d’Arles sheep. Source: Merinos d'Arles Selection

Breeding small livestock, predominantly indigenous sheep breeds optimally adapted to the environment is undoubtedly the most sensible way to use and preserve alpine areas. However, many areas, especially mountain pastures, are becoming overgrown, and the characteristic cultural landscape is being lost.

In the Alpine region, various indigenous sheep breeds were traditionally bred for wool production. Some of the best-known breeds are:

BERGAMASCA	The Bergamasca sheep breed originates from the Bergamo region in the Italian Alps. This breed is known for its long wool, called "capitone," which is used to produce sturdy and resistant fabrics.
MONTAFON STEINSCHAF	The Tyrolean Steinschaf is a sheep breed from the Austrian Tyrol. It is known for its coarse wool, which is used for durable carpets and coats.
VALAIS BLACKNOSE	The Valais Blacknose is a sheep breed from the Valais Valley in Switzerland. It is characterized by a black face and white

	wool that is used primarily for producing fine wool.
PECORA BIELLESE	The Pecora Biellese is a sheep breed from the Biella region in Piedmont, Italy. The wool of this breed is known for its softness and quality and is used for producing high-quality fabrics.
TIROLER BERGSCHAF	The Tiroler Bergschaf is a widespread sheep breed in Austrian Tyrol, Italy, and other parts of the alpine region. It is used for wool production and for managing mountain pastures.
MERINO D'ARLES	Also known as the Arles Merino, this breed originated in the Arles region of southern France, which includes parts of the French Alps. The Merino d'Arles is valued for its fine wool and is primarily used for wool production.
JEZERSKO –SOLČAVA SHEEP	The wool of the Jezersko-Solčava sheep is known for its high quality. It has a fine and soft texture, a high density of wool fibres, and a natural white colour, making it suitable for various products.

Mountain pasture and sheep farming are unique and an important element of alpine history and tradition, offering an alternative reality to intensive models of agro-zootechnical production. These practices play an important role in protecting and conserving the environment and the mountain area.

High mountain grazing is an important feature of the Alpine region. Source: Wikipedia

MONTAFON STONE SHEEP

ELISABETH WALCH & MICHAEL KASPER

HISTORICAL SHEEP FARMING IN THE MONTAFON

Sheep farming has always played an important role in the region. The Viennese folklorist Joseph Rohrer wrote about it as early as 1804:

"The Montafon farmer breeds several thousand sheep every year in his high mountain region. He does not fear that the harsh air and the biting frost could harm his beloved animals, which provide him with a plentiful income within his cliffs and disproves through practice what many a theorist in the parlour wants to know differently and better. The Montafoners willingly follow their sheep over the blackberry hills they seek, and only when a ram ventures too close to the glaciers is his heart filled with anxious sadness. For he knows from painful experience that if a single ram has the misfortune to fall into a mountain crevice made unrecognisable by the snow, a whole row of sheep will fall into the same abyss!"

The proportion was also very high across the region, as 57% of the 22,500 sheep in the whole of Vorarlberg in 1837 were in the Montafon alone. In addition to around 1,500 cows and cattle, just as many sheep were sold at the large Schruns livestock market in 1840.

In addition, the sheep were mainly used to supply the population with meat and to produce wool, which was also exported. In 1807, around 1,650 kg of sheep's wool was sold from the Montafon.

In statistics on livestock in the Montafon, the following figures were collected:

Year	Cows	Cattle	Sheep	Lambs	Goats	Pigs
1793	3,035	4,120	8,327	3,852	681	
1806	2,228	2,417	5,930	3,220	359	
1840	3,200	2,000	14,000	3,000	3,600	1.500

Flock of sheep with shepherd, St. Gallenkirch 1929. Source: © Montafon Archiv

MONTAFON STONE SHEEP

The Montafon Steinschaf was an endangered breed of sheep that was only found sporadically in the inner Montafon until a few decades ago. In the 20th century, it was displaced by larger and fatter breeds. Its distribution area extended mainly over the neighbouring valleys of Montafon and Paznaun.

Reconstruction of looms with clay weights, archaeological collection. Source: Loški muzej Škofja Loka

It is a breed that dates back far in history and differs only slightly from the Neolithic animals that were also kept in the pile-dwelling settlements.

The Montafon Steinschaf belongs to the Zaupelschaf breed group. Common characteristics of this group include coarse mixed wool, small, protruding ears, physical delicacy and a long tail. The character of the animals can be described as very trusting. This is probably due to natural selection in the context of alpine farming. Shy sheep were no longer found in autumn and were therefore excluded from breeding.

Montafon Stone Sheep are particularly suitable for a regional, sustainable, and ecological circular economy. Their keeping and utilisation in their original habitat also helps preserve their habitats' biodiversity, the alpine pastures and mountain meadows.

FUTURE PERSPECTIVE

The genetic diversity of plants and animals has decreased worldwide, especially in domesticated species. The intensification of agriculture – in conjunction with the use of high-performance species, the chemical contamination of soils, the displacement of original plant and animal species, etc. – have led to a dramatic loss of the unique biological diversity to which humans originally contributed with their site-adapted, local breeding methods. One example of this is the maintenance old domestic animal breeds that had undergone centuries of "development work" and were perfectly adapted to their natural environment. As already mentioned, these breeds produce less meat or milk and are nowhere near the weight of high-performance animals, but the products are almost unsurpassable because the animals have time to develop their characteristics in peace.

This also leads to a more sustainable type of economic profitability: "For extensive farming, a

Montafon Stone Sheep. Source: © Stand Montafon

breed with the characteristics of the Montafon Steinschaf is much more economical compared to high-performance animals. Although less yield is achieved, the costs (e.g. vet, feed costs) are much lower. The bottom line is more!"

In the case of old breeds such as the Montafon Steinschaf, the close relationship between the cultivated landscape and the associated breed is clearly visible. The areas that can usually only be farmed extensively, such as alpine soils or steep slopes in the middle tier, can be turned into pastureland with justifiable effort by these easy-to-rear sheep. The "market value" of this cultural landscape, which is kept open in this way, is reflected in Austria primarily in tourism, which benefits from these "natural" landscapes (cf. ÖKL, 2009). Cooperation between agriculture and tourism will therefore become increasingly necessary in the future and can make an important contribution to improving the quality of life in Montafon.

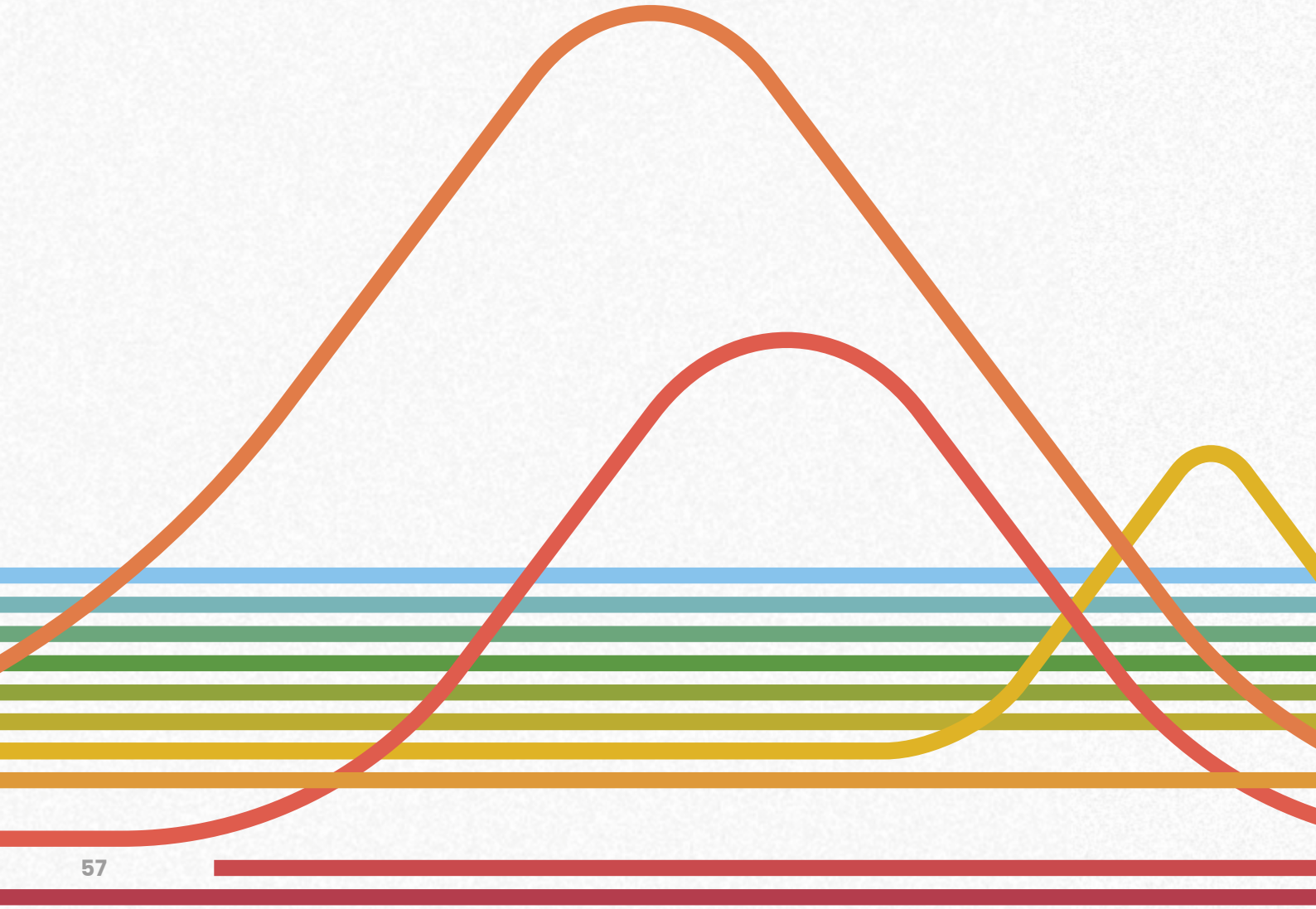
SOURCES:

Bayer, E. 1922. Untersuchungen über das Schaf des Montafons (Vorarlberg) und des Paznauntales. (Tirol). Wien.

Rohrer, J. 1804. Versuch über die deutschen Bewohner der österreichischen Monarchie. Wien.

Stadelmann, C. 2005. Das Braunvieh:

Eine Repräsentation. In: Rollinger, Judith Maria and Rollinger, Robert (eds.), Montafon 1 Mensch-Geschichte-Naturraum. Die lebensweltlichen Grundlagen. Schruns: Stand Montafon. 307.



JEZERSKO-SOLČAVA SHEEP AND ITS WOOL

MARIJA DEMŠAR & KATI SEKIRNIK

HISTORY

Archaeological finds from the Copper and Bronze Ages indicate that the population in the Škofja Loka area was alledly engaged in spinning and weaving. The oldest archaeological evidence of weaving in these places dates back to the Eneolithic or Copper Age (3800–2300 BC) as is demonstrated by the clay weights for looms that were found among the other material remains during excavations in the Lubnik Cave and the Kevdrc Cave.

The strong connection with the production of woollen materials remained present even in later centuries. Sheep farming was one of the most important livestock farming activities in the Škofja Loka area, especially in the Selca and Poljane valleys. Sources from the 16th century prove the importance of livestock farming in the Poljane Valley, where it is stated in the municipality of Hlevnovrh (Officio Klenovrch) that more than 90% of farms raised sheep in 1550. This trend declined drastically at the beginning of the 20th century.

Sheep farming was, in the past, also an important activity elsewhere in the Slovenian Alpine area. Data from the 17th century show that there were more sheep than cattle on the territory of Slovenia and that sheep farming even began to increase in the 18th century; however, it lost its former importance in the 19th century. This major change was mainly due to the gradual predominance of stable livestock over grazing cattle in the 18th century and imported wool from Australia and South America, which competed with domestic wool from the end of the 19th century. Data shows that in 1850 there were 5 million sheep in the entire Austro-Hungarian monarchy, but by the end of the 19th century number dropped significantly, and there were in 1910 only 2,5 million sheep. In addition to imported wool, domestic wool on the market also competed strongly with cotton. During the First and Second World Wars, there was still a slight increase in the numbers of sheep. However, as industrial and imported goods began to replace domestic linen and cloth in the postwar era, the spinning, weaving, and cloth industries began to decline, resulting as well in a decline in the number of sheep.

During the former Yugoslav era (1945–1991), most sheep and their pastures were located in mountain and karst areas. The Jezersko-Solčava breed was the most common breed and was especially widespread in the Slovenian Alpine region – especially in Jezersko and the upper Savinja valley around Solčava. One of the most important areas for breeding these sheep was the Selca Valley, especially the village below Ratitovec mountain.

In recent years, sheep farming has been revitalised, but mainly with a focus on meat production. Initiatives to increase the utilisation and quality of wool follow other initiatives throughout Slovenia (Solčava, Jezersko, Idrija, Cerkno).

JEZERSKO-SOLČAVA BREED TODAY

The breed was created by crossing primitive white domestic sheep with Bergamasco and Padovan sheep. Mountain breeds from the Western Alps were formed from small white domestic sheep, which they called Zaupelschaf. It has a characteristic convex head profile, which it inherited from the Bergamansca sheep, and high-quality wool, which it inherited from the Padovan sheep. According to the classification, the wool of the Jezersko-Solčava breed is composed the medium-coarse fibres, which means that it differs in texture from the wool of other Slovenian sheep (the wool fibres of different breeds are classified as coarse). It is, therefore, best suited for processing wool into yarn from which valuable products are made.

Important work to preserve the breeding of the Jezersko-Solčava breed and improve the quality of wool fibres is carried out by the Association of Jezersko-Solčava Sheep Breeders, which has been working to improve the quality of wool and its use for more than three decades. An important activity of the association is the breeding of purebred rams of the Jezersko-Solčava breed,

which provides breeders with certified rams from controlled organic farming and with a known origin. In cooperation with the Faculty of Biotechnology and Veterinary Medicine in Ljubljana, the association has set up a testing station in Jezersko, which is included in the joint national breeding programme. One of the main activities of the association is also the training of breeders with the help of specialised training courses in the areas of health, nutrition, and sheep breeding.

Since 1959, the association has organised an annual celebration of the end of the Ovčarski bal mountain pasture in Jezersko, depicting the life of shepherds and sheep on the high mountain pastures, their activities and customs and, of course, the arrival of the animals in the valley.

With the revitalisation of the Idrija-Cerkno Small Livestock Breeders' Association in 2020, a handicraft section was also established as part of the association. Its main goals include the preservation of handicraft heritage, the use of domestic and locally available wool, and the production and promotion of handicraft skills and products. From the very beginning, they have been committed to the use and promotion of local sheep's wool for handicraft products. The members of the section are involved in the production of wool products, spinning, felting, weaving and knitting.

Local wool is used in all activities and the manufacture of products. Breeders collect the wool, wash it by hand and process it using traditional methods. An important achievement of the section is their product "Wool from our sheep": local wool, where they guarantee not only quality but also traceability to the breeder. The association has its own premises in Solčava, where it sells its products and organises workshops and presentations in a wool boutique. The association has also been organising the Bicka Sheep Wool Festival in Solčava for 12 years. In 2004, women from Solčava and the surrounding area who worked in wool processing

Jezersko–Solčava sheep in the mountain pasture. Source: Društvo rejcev ovc Jezersko-solčavske pasme

Wool from our sheep, handicraft section Idrija-Cerkno small-cattle breeders' association. Source: Arts and Crafts Centre Škofja Loka

For 12 years, the association has also organized the Bicka Sheep Wool Festival in Solčava. Source: FB Bicka

also joined forces. They founded a cooperative, which eventually ceased operations due to a lack of commitment and the abundance of work on the farms. Years later, in 2014, they founded the Association for the Promotion of Wool Products from Jezersko-Solčava Sheep BICKA, which is still active. The association includes local women who felt, crochet, knit, and sell products made from

In collaboration with the designer the members of Bicka association developed a modern woolen cardigan, Planinka, made from domestic wool. Source: FB Bicka

Wool processing documentation. Source: Arts and Crafts Centre Škofja Loka

local wool. They also organise workshops and wool processing courses in these techniques.

In Slovenia, as in some neighbouring countries, sheep farming is not the most important agricultural sector. In the last two decades, it has been on the rise, but had previously been declining for many years. The revitalisation of the use of wool and people's growing awareness of a more sustainable way of life and the use of local and natural materials is increasing interest in local wool again. There are a number of local/regional initiatives aimed at restoring the supply of local wool, improving fibre quality, and adding value to this local material by using wool for high-quality products for domestic and personal use. This has also encouraged documentation as well as the creation of educational material. The Centre for Arts and Crafts and the Škofja Loka Museum collaborated in 2022 to publish a manual on the processing of wool (in Slovene language) and filmed the entire process together with the master craftswoman Bojana Ažman from the village of Žiganje in the Gorenjska region. All materials are available:

The handbook: https://issuu.com/rcdokofjaloka/docs/2022_09_13_priro_nik_volna_p

The video: https://vimeo.com/733941547?share=copy

SOURCES:

Kancler, K. 2023. Potentials and challenges of Slovenian sheep wool: Internal unpublished material. Idrija.

Trop, I. 2013. Tradition and innovation in the use of animal materials: Potential uses of Slovenian sheep wool, with emphasis on lower quality wool, feasibility study. Project Lanatura. Nova Gorica: KGZ Nova Gorica.

Šifrer Krajnik, S. 2022. From fleece to woollen yarn: An overview of the development of sheep breeding and spinning in Škofja Loka Area. In: Jerkič, Tajda and Kati Sekirnik (eds.), Wool: A handbook on wool processing. Škofja Loka: Škofja Loka Museum, 3–9.

Kavčič, P. 2023. First national meeting of spinners in Cerkno. Kmečki glas, 27. September 2023.

Slovenian autochthonous sheep breeds: https://www.heritagesheep.net/Jezersko.htm.

Association of sheep breeders of the Jezersko-Solčava breed: https:// www.ovce.si.

READ/LEARN MORE

Short ethnographic film about wool shearing in Solčava. Tajda Jerkič, 2022. https://www.youtube.com/watch?v=UqjP9LfH2y4.

2.2.2. FROM WOOL TO FABRIC

The basic technology of wool preparation has not changed much since prehistoric times. Sheep need to be sheared, the obtained fleece washed, and then carded or combed to prepare it for spinning. The procedures described below apply specifically to the Slovenian Alpine countryside, but similar methods were also employed elsewhere in manual wool preparation.

FROM WOOL TO YARN

To obtain wool, the sheep were traditionally sheared with special sheep shears in April, before they were taken out to pasture, and in October, after they had returned from the mountain pastures. Two days before shearing, the sheep were washed in the basin of a mountain stream, in a wooden tub, or in a trough filled with lukewarm water, rainwater or water with soda added to make the wool suppler. Wool that was washed before shearing retained more natural oils, making it easier to spin. After washing, the wool was dried in the sun. During shearing, the sheep were placed on low wooden tables and restless sheep had their legs tied together. Shearing began at the tail and ran from one side to the other. Shearing a sheep took about half an hour yielding between one and six kilogrammes of wool. The best fleece was found on the shoulders, ribs and hips. The shorn fleece was washed later if the sheep were not washed beforehand. The loosened sheep fleece was air-dried on a board or sheet, and the dried wool was stored in linen sacks in attics.

In Montafon, Austria, the sheep were also shorn once or twice a year (in spring and autumn). The freshly shorn raw wool was sorted, washed, dried, combed, and carded. The basic colours of white, brown, grey, and black could be supplemented with other colours.

Before winter, the sheep's fleece was combed or carded with brushes, or taken to a carding machine for carding. Carding took place on a narrow wooden bench with four legs, with a wooden box at one end to store the uncombed wool. The box was covered with a lid, into which short, thin iron pins were hammered from the opposite side. At the other end of the bench was a place where the carder would sit. They placed a small amount of fleece on the lid with the pins and combed it with a hand card, also fitted with iron pins. They removed any dirt and debris by combing the fleece in both directions. Each part of the carded wool was rolled into a bundle, and the woollen yarn was prepared for spinning.

Flax and woollen yarn were spun similarly, with the difference that larger spinning wheels were used for spinning wool. The spinner held the yarn in her left hand, twisting the fibres and attaching

Flock of pastor Andrea Palamini. Sheep shearing. G. Agostini. Mezzate (MI), 1996-1997. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Shearing sheep in Bartholomäberg. Source: © Montafon Archiv

Hand spinning. Elderly woman at work. P. Navoni, Premana (LC), 1975. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Hand carding. Elderly woman at work. P. Navoni, Premana (LC), 1975. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Elderly woman at the spinning wheel. P. Navoni, Premana (LC), 1975. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

the thread to the spindle. The spindle would spin, and the spinner would draw out the yarn, creating a thinner or thicker woollen thread.

When the thread became long enough for the spinner to lift her hand, she would stop the wheel with her right hand and turn it round with the handle. Unlike linen yarn, which could be used as a single strand for knitting and weaving, a single strand of woollen yarn was insufficient. Therefore, two woollen threads had to be spun together. Two spindles of the spinning wheel were attached to a wooden holder, while the third spindle was attached to the spinning wheel itself. The two threads were twisted together by turning the wheel in the opposite direction. The spindle rotated in the opposite direction and the spun thread was wound onto it. The spinner would then add more fibres and repeat the process until the spindle was full. She would replace the full spindle with an empty one and repeat the whole process. To obtain a thicker yarn, several threads were twisted together.

They wound the yarn from the seven spindles into strands using a glider. Once all seven spindles were wound, they tied the threads together to prevent them from getting tangled. The strands of wool removed from the swift were then ready for washing. They were washed in a similar way to

linen, with soda added to the water. After drying, the strands were wound onto the swift and formed into balls.

An even older technique of yarn production was with a distaff, in which a uniform yarn was produced by twisting individual short fibres or fibre bundles. This yarn could then be used for knitting.

The yarn was transferred to weaving bobbins to weave fabrics. A woven fabric consists of two thread systems that cross at right angles; the way they cross is called a weave. After a certain number of warp and weft threads, each weaving pattern has a point from which it is repeated; this repeating unit is called the repeat. Weaving was done on the loom, which consisted of a wooden construction to which the taut warp threads were attached. Different groups of warp threads were raised or lowered at the same time. This enabled professional development. A cross thread - the weft thread - was pulled horizontally into this shed and crossed with the weaving sword. Crossing the threads created a textile surface.

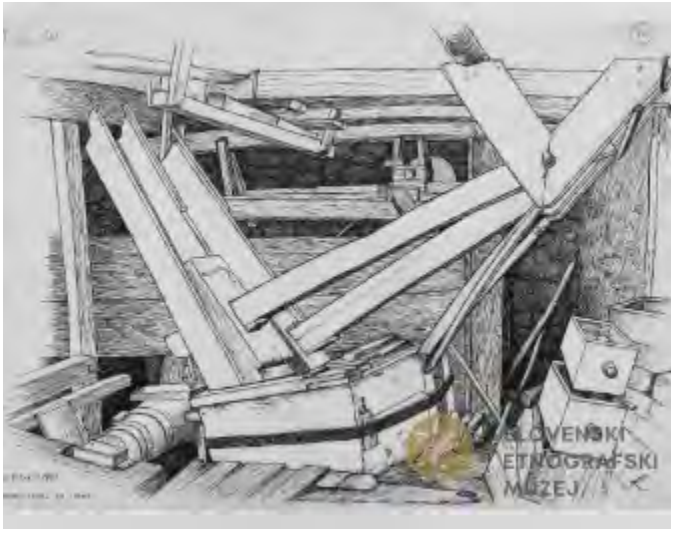
WEAVING AND FULLING

After the wool was woven, further processing could follow. Lodn is one of the traditional fabrics that gets its properties and name only through further processes as Lodn/cloth is a woven woollen fabric that was then fulled. After the cloth or other semi-woven fabric was woven, the farmers took it to the fulling mill, where it was fulled and pressed.

The wool fibres are interlocked together and thickened during the fulling of woollen fabrics. In Slovenia, there used to be two types of fulling mills: those operated with (soft) water and those operated manually. Water (water wheel) or human power could drive the beaters used for fulling. The cloth was soaked in hot water, and fulling was carried out for about an hour. This process was repeated three to four times. As soon as the cloth was sufficiently thickened, it was washed, hung up and dried on wooden frames with pointed nails on which the cloth was stretched. After it was dry, the cloth was brushed to create a napped surface or velour, which was then fulled and brushed again. The cloth was stretched over a filled sawdust pad, and the long fibres were trimmed off with long knives and mixed with birch brooms. If the cloth was not sufficiently fuelled, it was pressed. Using these techniques, they obtained warm and durable fabrics such as coarse and fine loden or "Landtuch", a fabric made from coarse woollen and coarse linen yarn. *Mezzalana*, a fabric with a warp of linen and a weft of wool, usually in plain weave. So-called *ras fabric* was a coarse, mostly grey, home-made cloth. It was woven from a combination of linen and woollen threads, with linen and sometimes hemp forming the warp and wool the weft.

The next steps included dyeing, washing the fabrics in cold water and drying it in the sun. The coarser cloth was dyed by soaking in a solution of chestnut shavings if it was to be brown and in a solution of green gallica if it was to be grey. Basil was added to the gallica to give it a black colour. Chestnuts were first boiled, then salt was added to the drained water and the goods were dipped in it. Natural dyes were mixed with urine to dye the wool, as they worked better on the fibres if they were loosened up with urine beforehand. The urine was diluted with water in a ratio of one-part urine to three parts water and the mixture was heated. The mixture boiled and began to turn sour. When it was acidic enough, a woollen cloth was soaked for a quarter of an hour to loosen it. Then it was rinsed out.

Because of its uneven thickness, the woven cloth had to be rolled and compacted in a fulling mill. Rolling the fabric means that the wool fibres are flattened and compressed. The reason for this is that wool fibres and other animal fibres have such a structure that intertwine and stick together to form a strong fabric when carded in hot water. In the past, fabrics were produced with the help of so-called woofs or cloth beaters. These were large water-powered hammers that stood alone or next to mills. There were two types of mills: (soft) water-powered and hand-powered. The cloth beaters could be driven by water (mill wheel) or



Fulling mill from Vitanje in Slovenia. Source: Slovenski etnografski muzej

"Monga", device for ironing fabrics in Pirc dye house in Kranj. Source: KSK Foto

Simple device for fulling or walking from Slovenia. Source: Slovenski etnografski muzej

human power. Forty to fifty metres of cloth were stacked in a trough, doused with hot water, and worked with the hammers for about an hour. The cloth was then taken out and stretched, and the process repeated several times to ensure that the cloth was evenly compacted. When sufficiently compacted, it was washed, hung on wooden frames with pointed nails, stretched, and dried. It dried within a day. The fabric was brushed in the frame to obtain a shaggy fabric or velour, which was then rolled and brushed again. It was then presssed if it was not sufficiently cottony.

Some fabrics were wound onto wooden rolls and placed in a "monga", a device for ironing fabrics. Heavy stones, which were kept in a wooden box, served as a means of pressure. In this way, the fabric was ironed and smoothed. The fabric, on the other hand, was rolled more carefully: first for five minutes, then fifteen, then half an hour and so on until it had reached the desired density.

Due to the increasing availability of industrial goods and products from the nearby industrial fulling mills, cloth production became a supplementary activity in rural areas after the First World War.

SOURCES:

Baš, A. (ed.). 2004. Slovenski etnološki leksikon.

Kotnik, F., 1949. O valjanju domačega sukna: doneski k zgodovini domače suknarske obrti. In Slovenski etnograf (2). Available at: http://www.dlib.si/details/URN:NBN:SI:doc-UDN3KWLK.

Novak, A., 1964. Domače tkalstvo v Gornjesavski dolini. In Slovenski etnograf (16/17). Available at: http://www.dlib.si/details/URN:NBN:SI:doc-VQIEEJZE.

Šega, J., 1997. Delovni red Krennerjeve suknarne. In Loški razgledi (44). Available in: http://www.dlib.si/details/URN:NBN:SI:DOC-04GEK81N.

Makarovič, M. 1994. Slovenska ljudska noša v besedi in podobi. Zv. 7, Litijsko Posavje.

Makarovič, M. 1991. Slovenska ljudska noša v besedi in podobi. Zv. 5, Zilja.

SHEPHERDS AND MOUNTAIN PASTURES IN VAL CAMONICA

LISE ALINE BEGALLI

HISTORY

The Val Camonica is an Alpine valley that is closely linked to transhumance. There is evidence of the practice of transhumance, which was administered by the powerful monastery of San Salvatore in Brescia, between the Val Camonica and the Po River by the early Middle Ages.

There is ample evidence of the presence of Camuni transhumants in the lower Lombardy plain in the Middle Ages. But from the 14th century onwards, cows were also introduced to the plain. Gradually, the transhumance of cattle differed from the transhumance of sheep, resulting in the emergence of the Bergamini, the dairy farmers who continued their transhumance activity until the 20th century. Historical documents show that these Bergamini came not only from the valleys of Bergamo but also from Val Camonica. Bergamini came from Saviore as well as from Borno, the upper villages of Artogne and some centres in the middle valley. The upper valley was the exclusive realm of the "shepherds." Pezzo, Precasaglio, as well as Vione and other hamlets were became known as "shepherd towns".

Bergamino on the horse. P. Scheuermeier, Sant'Omobono Terme (BG), 1927 Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

The Bergamini from Val Camonica appear as bearers of a culture that is still very different from that of the sedentary local farmers and (as in the case of the "sheepmen") is linked to ancestral characteristics. The ritual of jumping into the flames, the masculine clothing of the women, and the use of gold earrings by the men (until well into the 20th century) paint a picture of Bergamasco pastoral culture rooted in the high valleys as a deposit of cultural stratification.

Transumanza in Lombardia. C. Meazza, Remènch. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Shepherds were also closely connected with sheep breeding and transhumance. The life of the shepherds was harder than that of the Bergamini, who had a few rooms and a fireplace in the farmhouses of the Bassa in winter. The Bergamini almost always moved with his family, or at least part of his family, to the plain. On the other hand, the shepherd, who was

Wool on the sun, P. Navoni, Premana (LC), 1976
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more in line with the model of the constantly travelling nomad, often had no fixed base in winter and moved around almost continuously in search of pasture, often sleeping in the open and in any case in makeshift huts. However, not all shepherds followed this model, which seems to be typical of the shepherds of the upper valley.

With the descent of herds from the pre-alpine valleys to the Lombardy plains in the 16th century, Lombardy's transhumance saw the rise of heifers and dairy cows in the following centuries. Transhumance gradually declined with the progress of fodder production and the emergence of farms with stables and dairies. However, shepherds continued to move their flocks of sheep and goats in search of pasture along the rivers and in uncultivated areas. Today, most of the transhumant Bergamo sheep graze in the Bergamo Orobic Alps and in the neighbouring areas of Valtellina, Vallecamonica, and Valsassina. In winter, the flocks remain in the lowlands between Pavia and Mantua, the Alessandria area, Emilia, and Brianza. Although transhumance and sheep farming continue to this day, the purpose of breeding has changed fundamentally.

TECHNIQUE

Alpine pasture is the agricultural management activity of one of the oldest mountain huts or Alps, based on the summer transhumance of livestock. In Lombardy, it is practiced at altitudes between 600 and 2400 metres above sea level. It begins with the climb to the mountain between the end of May and mid-June and ends with the dismounting, i.e. the descent back to the valley floor or the plain around mid-September. The practice of the *maggengo*, a pasture is located between 500 and 1200 metres above sea level. In fact, in the month of May (hence the name "Maggengo"), the animals are brought there in anticipation of the milder temperature, such as Brown, Friesian, and Pezzata breeds Red and crossbreeds, followed by goats, horses, very often accompanied by pigs. The animals that graze on the mountain pastures are usually dairy cows and sheeps. The progressive abandonment of livestock farming on mountain pastures, which penalises people, is now leading to a progressive increase in sheep breeding in the Alps.

The processing (shearing, carding, and spining) of sheep's wool, which comes from herds bred on the numerous mountain pastures of the valley is becoming increasingly rare and almost sporadic. Nevertheless, these activities remain part of the productive and economic cycle of an Alpine valley like Val San Giacomo. The spinning of wool, an activity carried out by the women in their own homes, is, or rather was, an important source and support for the family economy, an indirect gain that provided the basic material for the family's clothing free of charge. The animals also have to be sheared (at least once a year, preferably twice) and the women of the family work for free, both in processing the raw material (as mentioned in carding and spinning) and in tailoring the clothes. Huge quantities of wool are also needed to make mattresses and quilted bedspreads, another basic addition to the home furnishings. This process has begun to disappear for various reasons, opening a debate on the problems related to the use of natural resources, such as wool in the Alpine areas, and its disposal due to overproduction.

Unfortunately, wool has become a hazardous waste as well as a burden for shepherds and small sheep farmers, who no longer know how to

Shepherd with flock of sheep. E. Fazioli, (CR), 1935. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Transumanza in Lombardia. C. Meazza, Remènch. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

deal with the quantities produced. This is especially true after the closure of the historic Ariete wool-washing mill in Gandino, which washed the dirty wool of transhumant shepherds and many farmers who managed to pile up the product and take it to the washing facility.

SHEPHERDS AND MOUNTAIN PASTURES TODAY

In the Alpine valleys, sedentary pastoralism, combined with forms of small transhumance (towards the upper valley or a nearby valley, or simply as an ascent to the high pastures of the community), was also closely linked to agricultural activities. Today, the revival of livestock farming and agriculture is crucial for the preservation of mountain centres, especially for the smaller centres that do not host tertiary activities and which, in order not to become mere dormitories, can only rely on artisanal and agricultural activities. The return to small-scale production and to mixed activities (livestock, forestry, agriculture) is a prerequisite for environmental and economic sustainability.

Recognising the environmental and socio-economic function of mountain pastures, the role of guardians of the territory and local traditions entrusted to mountain shepherds and their multifunctional characteristics help create a community of stakeholders who are aware of the great value of the areas they manage, the preservation of nature and the landscape, as well as the enhancement of local and typical quality products.

A particularly important organisation in the area is MACIL (https://macil.it/), Malonno Centro Itineranza Lana, a documentation centre and community centre for creative people, artists and artisans. A place for meetings, exchanges, and culture, the centre focuses on sheep farming and wool in Valle Camonica and Lombardy. The centre is based in Malonno and is coordinated by the Coda di Lana association. It was founded in collaboration with the Lombardy region, the mountain municipality of Valle Camonica, and the municipality of Malonno. The centre collects documents, materials and stories with the aim of becoming an archive for various types of wool and everything to do with the world of shepherds. The term Macil is not only an abbreviation but also means "boy who helps the shepherd" in the old Gaì jargon used by transhumant shepherds. The choice of the term MACIL also stems from the idea of positioning the centre as a point of reference for young people, th involve them in the management and organisation of events and the development and elaboration of new important ideas for community life.

In Lombardy, there are also some other experimental productions of clothing, quilts, and carpets using the wool collected from small producers, especially in Brianza. One such project is the Raffin project (https://www.arteinfilo.it/Lana_brianzola.php), an artisan community linked to the natural fibre supply chain.

SOURCES:

http://www.ruralpini.it/Transumanza-camuna.html

https://www.intangiblesearch.eu/show_ich_detail.php?db_name=intangible_search&lingua=italiano&idk=ICH-FPR00-0000000158

https://www.intangiblesearch.eu/show_ich_detail.php?db_name=intangible_search&lingua=inglese&idk=ICH-AGO00-0000001670

https://www.ersaf.lombardia.it/montagna/alpeggi-regionali/valore-e-funzioni-degli-alpeggi/

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WOOL PROCESSING IN VAL GANDINO

FRANCINA CHIARA

HISTORICAL INTRODUCTION

The earliest traces of wool processing in Val Gandino, a side valley of Val Seriana in the province of Bergamo, date back to the 11th century; by the following century the wool industry was already an important economic sector alongside mining and metallurgy. A local breed: the large Bergamo sheep, which resembles a ram, was mainly bred for meat production and provided wool, which was used from the 14th century onwards for the making of personal garments for the Humiliati religious congregation.

Between the 15th and 17th centuries, the valley's woollen mill experienced a flourishing development based on the export of high-quality woollen cloth to German countries. Towards the end of the 17th century, the industry declined for several reasons: the difficulty of repositioning itself with a cheaper product now demanded by the market, competition on the Lombard market from the ordinary cloths from Zurich, the obligation to obtain the raw materials necessary for wool processing such as oil, soap and dyes from Venice, the protectionist policies of the Empire and the Italian states and the withdrawal of the most powerful wool merchants in the region, who became landowners and acquired aristocratic titles. However, in the 18th century, despite the decline in cloth production, 24 families were still active in the wool industry, processing both the local wool offered by the shepherds from Bergamo and Brescia at the Clusone market and the imported wool from Apulia, Romagna and the Levant.

In the first decades of the 19th century there was a revival, triggered during the Napoleonic period by public orders for the army to wear sturdy clothes made advantageously with Bergamo wool. The inhabitants of Gandino obtained state funding to install new machinery and improve road connections, as well as export licences for the French departments in the face of France's protectionist policies. With the mechanisation of the production chain and the concentration of production activities in factories, the wool industry in Gandino experienced a boom, supported by the arrival of foreign investors, especially from Switzerland, and based on the use of local and imported wool (Veneto, Romagna, Puglia, Hungary, Russia, Levante, Australia). Despite mechanisation at all levels of a complete chain, Val Gandino retained the ability to produce a wide range of products, including high, medium and ordinary-quality fabrics for clothing and furnishings.

After the foundation of the Kingdom of Italy in 1861, competition from other wool centres led to a reduction in activity and a shift to special productions such as the grey blankets of Leffe for the army, which were exported to other countries, as well as cloth for billiard tables and the robes of monks. This was followed by a fluctuating period of small recoveries linked to the switch in production to carpets, felts and mattresses as opposed to the traditional woollen cloths.

Even today, there are still industrial companies in Val Gandino that are active in the wool industry

A flok of sheep in the center of Gandino during a village feast. Source: Instituto Marangoni.

and have also opened up to the processing of other raw materials that come from different parts of the world but are processed in an internal or localised production chain.

THE WOOL CLOTH PRODUCTION CHAIN

In the Gandino Valley, the wool industry could rely not only on pastures, sheep, and shepherds but also on craftsmanship in the various processing phases, forming a complete chain from fibre to fabric, with the actors in close contact with each other.

The first step in processing the raw material was the shearing of the sheep, which the Bergamo-Camuni shepherds carried out on the spot as they travelled through Gandino. After shearing, the dirty wool had to be washed before being passed on for carding, spinning, weaving and preparatory activities such as warping and finishing.

Washing was a fundamental process because dirty wool was not easily preserved. Carding made it possible to untangle the wool and prepare it for spinning, which provided the threads needed to weave the fabrics. Both processes were mechanised in the 19th century.

The length of the pieces of woollen cloth was regulated, which was significant during the warping process, i.e., when preparing the order of the warp threads to be placed on the loom. Between the 13th and 14th centuries, the length of Bergamasque cloth was reduced from 62.5 metres to about half that length, i.e., 31.44 metres. The number of threads per centimetre, on which the weight of the fabric depended, was another aspect regulated by the statutes. In Bergamo, in 1457, the Paratici statutes provided fines proportional to the faulty weight of the pieces and sanctioned behaviours that temporarily increased the weight of the threads.

The valorisation of the woven fabrics then took place through dyeing: the scarlet cloths of the Gandino Valley were so famous that the fabrics of the bright red shirts that marked Garibaldi's Expedition of the Thousand were dyed in Prat Serval. The dyeing techniques used almost exclusively organic

Antica ciodera Torri. Source: Instituto Marangoni.

Piece of cloths dyed in scarlatto red. Source: Le cinque terre della val Gandino

Packed Val Gandino wool. Source: Instituto Marangoni

materials in combination with primitive chemical compounds. Scarlet was dyed with the powder of the cochineal, a tiny parasitic insect of which only the females were used; the water quality was significant for the luminosity of the colour. As it was an expensive dye, no more than two hundred Garibaldians left the city with a "regular" uniform.

The finishing of the fabrics finally involved fulling, which provided felting; the cloths were then laid out to dry on so-called *ciodere*, drying racks built on the steep slopes that connect the Romna valley with the plateau on which Gandino is located. Three sides were walled, while the southern side was open. Drying was carried out in a frame called *ciodere* which was a wooden structure in which the cloths were fastened with nails, hence the name.

VAL GANDINO TODAY

The communities and operators of the Gandino Valley have launched a project via the Local Action Groups (GAL) to valorise the *lana sucida*, the fresh wool from the shearing of the shepherds. This can no longer be washed locally, as a historic plant dedicated to this function (the Pasini family's Ariete factory) was closed in 2018; as a result, it often has to be disposed of as waste. The recovery of the washing process is important to connect the agricultural world with the industrial one. Some sectors with high technological content or in construction could use local wool by activating a circular economy path.

In the Gandino Valley, business activities are still linked to the tradition of the wool production chain: The Presti family, for example, continues the ancient art of dyeing through the company Lafitex, which has restored the famous scarlet colour of Garibaldi shirts on the occasion of the 150th anniversary of the Unification of Italy.

SOURCES:

Barbieri, G. 1974. La produzione delle lane italiane dall'età dei comuni al secolo XVIII. Spallanzani, M. (edited by), La lana come materia, i fenomeni della sua produzione e circolazione nei secoli XIII-XVII. Firenze: L. S. Olschki.

Comune di Gandino. 2012. *Gandino. La storia*. Gandino: Comune

Cova, Alberto. 1988. Tradizione e innovazione nel mutato contesto politico e territoriale dell'età francese, In: Moioli, Cova and Carera, Trezzi (eds.), Un sistema manifatturiero aperto al mercato, Storia dell'industria lombarda, vol. I. Milano: Il Polifilo, 105–200.

Irranca, Franco. 2012. I pannilana a Vertova e in Valgandino. Vertova: Proloco.

G. Maironi Da Ponte, Giovanni. 1803. Osservazioni sul dipartimento del Serio. Bergamo: da Alessandro Natali

Moioli, Angelo. 1988. Assetti manifatturieri nella Lombardia politicamente divisa della metà del settecento". In: Moioli, Cova, Carera, Trezzi (eds.), Un sistema manifatturiero aperto al mercato, Storia dell'industria lombarda, vol. I. Milano: Il Polifilo, pp.3-102.

Pizzorni, Geoffrey John. 2000. La ditta marcantonio Bonduri alle fiere di Bolzano tra il XVII e il XVIII secolo. In Centro Culturale Nicolò Rezzara (edited by), Antiche sete e argenti d'Europa. Fede, arte, commercio in Val Gandino. Bergamo: Silvana Editoriale, 27–28.

https://myvalley.it/2021/10/un-peccato-buttare-la-lana-in-val-seriana-un-progetto-per-valorizzarla/

https://www.lecinqueterredellavalgandino.it/tradizioni/le-camicie-scarlatte-dei-mille-di-garibaldi/

https://www.ruralpini.it/Lana_Valgandino_la_storia_riparte.html

LA ROUTO, AN OUTDOOR BRAND ON THE FOOTSTEPS OF TRANSHUMANT SHEPERDS, AND ITS ROLE IN THE VALORIZATION OF THE MERINO D'ARLES WOOL

Transhumance, the seasonal movement of livestock to different grazing grounds, was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in 2019. The Maison de la Transhumance, founded in 1997, unites breeders, agricultural and environmental experts, cultural operators, and local representatives to support and promote this practice. Since 2012, it has been based at the Domaine du Merle in the Crau plain. Recognized as an interpretation center for Mediterranean pastoral cultures, it actively promotes the economic, heritage, and environmental value of transhumance and pastoral livestock farming. The Maison de la Transhumance has been pivotal in preserving the transhumance from Provence to the Alps, revitalizing the merino d'Arles sheep breed, and establishing connections with the textile industry through the La Routo brand.

Angèle Martin with the Lemercier herd in Saint-Martin-de-Crau. Source: Maison de la Transhumance.

TRANSHUMANCE FROM PROVENCE TO THE ALPS AND THE LA ROUTO HIKING TRAIL

Transhumance remains a living tradition in the mountainous and Mediterranean regions of France, especially between Provence and the Alps, where the practice, dating from the 11th century, still holds significant economic and social importance, with around 600,000 livestock grazing in the mountains during summer and 90,000 wintering in coastal areas. The livestock breeds involved, such as the merino d'Arles, préalpes du sud, and mourérous sheep, are the result of careful selection for hardiness, sociability, and adaptability, enhancing their suitability for transhumance and the production of wool, cheese, and meat.

Historically, transhumance necessitated a dedicated network of routes, known as drailles or carraires, linking Lower Provence to the Alps. To raise awareness of this heritage, the Maison de la Transhumance and the Unione Montana Valle Stura (Piedmont, Italy), along with numerous other partners, launched a project to develop a tourist itinerary following the paths of transhumant shepherds who, since the 15th century, crossed the Col de Larche to reach the summer pastures of the Stura Valley. This cross-border hiking trail, named La Routo (from the Occitan *far la routo*, meaning "making the journey") was designated a "Sentier de Grande Randonnée" in June 2020 under the name GR®69 La Routo®. The trail serves as a tool for sustainable regional development, integrating agriculture, gastronomy, tourism, crafts, textiles, environmental and heritage sectors around the theme of transhumance, which is emblematic of the SUD Provence-Alpes-Côte d'Azur and Piedmont regions.

THE MERINO D'ARLES BREED AND ITS WOOL

The merino breed originated in Spain during the 12th century, introduced by the Moors. Due to the high quality of their fleece, the Spanish monarchy forbade the export of merino sheep under penalty of death. After decades of attempts, in 1786 King Louis XVI of France obtained from the Spanish Crown a small herd of merinos, leading to the creation of the *Bergerie Nationale* of Rambouillet,

The itinerary of La Routo from the Crau plains to Piedmont (Source: La Routo)

which preserved and improved the breed in France. Merinos were introduced to Provence in 1804 when Napoleon established the *Bergerie Impériale* of Arles.

The Merino d'Arles breed resulted from cross-breeding local fine-wool ewes with merino rams from Arles' imperial sheepfold. The Syndicat des Éleveurs de Mérinos d'Arles was formed in 1921, and the breed – previously known simply as *metisse* – was officially named Mérinos d'Arles. In response to declining wool prices, the syndicate infused the breed with Mérinos Précoce blood to enhance its size and precocity. The breed's selection was managed by the Domaine du Merle from 1928 to 1988, which housed a nursery flock of rams rented to local breeders. Today, the merino d'Arles breed is primarily found in southern Provence-Alpes-Côte d'Azur, particularly in the Crau plain, where 120,000 of the breed's 250,000 ewes are located.

The merino d'Arles is a rustic breed, small in stature, with ewes weighing 60 kg and rams 70-90 kg. Its white, homogeneous wool covers the entire body, including the forehead and jowls. The wool is fine, long, supple, strong, and wavy, with an average fleece weight of 2.5 kg for ewes and 5.5 kg for rams. Merino d'Arles wool is the finest in Europe, averaging 21.5 microns, but has a low washing yield of around 41%. The breed is hardy, capable of long-distance walks to find food, especially in mountain pastures, and can withstand variations in daily rations by mobilizing body fat reserves. Its fleece offers protection against climatic conditions, making it suitable for both mountain grazing and wintering in the Crau.

Despite its historical significance, the value of wool – once the "white gold" of Provence, has diminished remarkably. This breed made the fortunes of the Pays d'Arles (the region that historically included the Camargue and the La Crau plain) until the 1950s. The Arles Merino wool

Merino d'Arles sheep. Source: Maison de la transhumance.

began to decline in the early 20th century with competition from the southern hemisphere (e.g., Australia, New Zealand) and the arrival of synthetic fibers. Today, it is a by-product of sheep farming, now focused on lamb meat production. Many breeders have chosen to produce lambs under the “Agneau de Sisteron” Protected Geographical Indication. As a result, “breeders have lost interest in their wool”. In Provence, as elsewhere in France, shearing is done more for the animal's well-being than for the wool trade.

Despite its historical significance, the value of wool – once the “white gold” of Provence – has diminished, primarily due to competition from wools from the southern hemisphere and synthetic fibers. Consequently, sheep farming in Provence has shifted focus to lamb meat production, with many breeders producing lambs under the "Agneau de Sisteron" Protected Geographical Indication. As a result, wool has become a by-product, with shearing performed more for animal welfare than for wool trade.

Despite these difficulties, unlike some coarser French wools, merino d'Arles wool was still sold to traders, mainly for export to China. With limited care given to animal preparation, shearing and wool collecting, the greasy wool, full of straw and foreign matter, was simply pressed into bales and sent to China. However, the wool's low selling price often did not cover shearing costs. Local attempts to add value to the wool, such as producing sweaters or insulation materials, faced challenges due to high costs. The Maison de la Transhumance has been exploring ways to improve this situation, and the La Routo initiative has contributed to bring positive changes.

LA ROUTO: A BRAND TO HELP BREEDERS BETTER MARKET MERINO D’ARLES WOOL

For many years, the Maison de la Transhumance sought ways to help merino d’Arles breeders better market their wool. In the early 2010s a shepherd, noting the success of a New Zealand brand in France that offered technical garments for mountain sports, suggested an idea to Patrick Fabre, the director of the Maison de la Transhumance: "Why not us?" Despite Fabre’s support, initial skepticism was widespread due to numerous past failures in promoting wool both regionally and nationally. However, in 2014, the La Routo hiking trail project provided a new opportunity. By combining this project with the technical clothing initiative, the Maison de la Transhumance secured EU funding. They sought a company for production but found none in France, as "Arles Merino is little-known in the textile world,” recalls Fabre.

Value chain of La Routo products
(Source: Maison de la trasnhumance)

Thus, the Maison de la Transhumance collaborated with Michael Dal Grande Naturfasern, a German company specializing in noble animal fibers that recognized the value of Arles Merino wool. At the time, the company already produced wool yarns for the brand Bergère de France containing 60% merino d'Arles. The third partner was the merino d'Arles breeders. In 2018, under the guidance of the Maison de la Transhumance and the Maison Régionale de l'Élevage, thirteen breeders founded the Collectif pour la Promotion du Mérinos d'Arles (CPMA). By 2020, membership had grown to 25, and 100 tons of wool were collected for La Routo outdoor clothing. Three prototypes were developed: technical socks, a jacket, and a sweater. However, "first layer" garments requiring skin contact were problematic to develop with 100% merino d'Arles wool, as it was not thin and soft enough, resulting in a scratchy sensation that limited market potential. After initial unsuccessful prototypes, Mr. Del Grande suggested blending it with wool from merino sheep raised in the Falkland Islands, enabling the completion of the La Routo product range.

Except for ‘first layer’ products, Del Grande explains, the idea behind La Routo was to “do

Label of a La Routo product. Source: Maison de la transhumance.

La Routo product. Source: Michael Dal Grande Naturfasern.

The trademark serves as a seal of authenticity. Source: Maison de la transhumance.

something in a 400 km circle" to decrease the carbon footprint. The wool for La Routo products is sorted in Valensole, Alpes de Haute-Provence. After shearing, the greasy wool is transported to Biella, where it is washed, combed, carded, and spun. Finished products are made in Biella (sweaters and jackets), Troyes in France (socks), and Baden-Württemberg in southern Germany (t-shirts).

La Routo products have faced criticism for not being 100% French. However, France lacks the industrial wool sector's know-how and capacity, and all selected partners are competent and reliable. La Routo's value chain, unlike that of competing global brands, remains predominantly Alpine, and cross-border collaboration permits to benefit from territorial specialization and increase sustainability. This choice is also consistent with historical transhumance routes that connected Provence to Piedmont.

The brand was launched in 2022, and products are now distributed online. Collaborating with the brand allow breeders to better remunerate their work. To sell their wool at its best, breeders had to revive forgotten skills: selecting lambs with the more beautiful fleece and sort out for spinning only the finest wool (the less noble parts, such as legs, belly and head, are put aside and are generally destined for stuffing mattresses). Thanks to this new value chain, breeders are able to sell their fleece at a higher price. Between €0.20 and €0.40 more per kilo, depending on whether the wool is sorted, organic or not. "It's a modest increase, but it at least covers the cost of shearing," says Patrick Fabre. Above all, the breeders have regained "a little pride in this exceptional wool".

Michael del Grande Naturfersen registered the trademark Merinos d'Arles Selection © to market wool from this indigenous breed. This can be seen as part of an ingredient branding strategy to highlight the importance of terroir in fibers. Terroir combines natural factors (climate, soil) and cultural factors (farming practices, know-how) that influence product quality. While merino wool is often seen as a commodity, wool from specific regions can have distinct qualities and symbolism. Merino d'Arles wool, for instance, is not as fine as Australian or New Zealand wool but is "the finest merino wool of Europe." As this case study shows, it can be marketed through its transhumance heritage, linking Provence to the Alps, appealing to consumers seeking authenticity.

For these strategies to succeed, consumers must understand that not all wools are the same. This involves creating products that showcase each wool's unique qualities and using storytelling in

communication strategies to emphasize each breed's heritage. The history of Merino d'Arles can serve as an inspiring example for other Alpine wools.

SOURCES:

Patrick Fabre, Maison de la Transhumance (Interview)

Michael Dal Grande, Michael Dal Grande Naturfarsen (Interview)

Collectif pour la Promotion du Mérinos d'Arles (brochure): <https://www.transhumance.org/wp-content/uploads/2021/06/Depliant-CPMA.pdf>

Fabre, P. "Creation et animation d'une MAISON DE LA TRANSHUMANCE, Centre d'Interprétation des Cultures Pastorales Méditerranéennes". In *Pastomed. Le Pastoralisme Méditerranéen: situation actuelle et perspectives*, pp. 74-78. Available at: <https://mrepaca.fr/wp-content/uploads/2019/03/100PPASTOMEDFRANCAIS.pdf>

Fabre, P., G. Guérin, and P. M. Bouquet. 2010. "La gestion des espaces par le mouton. Exemple méditerranéen français. Le mérinos d'Arles en transhumance." In *8th World Merino Conference*, pp. 3-5. 2010.

Fabre, P., and G. Lebaudy. 2004 "La mémoire longue d'un métissage: la «métisse» ou la race ovine mérinos d'Arles." In Anthropozoologica 39 (1): 107-122.

La Routo: https://larouto.eu/en/

La Routo: *Intinéraire Agrotouristique sur les pas de la Transhumance*: <https://www.transhumance.org/wp-content/uploads/2021/03/La-Routo-2021.pdf>

La Routo online shop: <https://transhumance.de/en>

Le Marois, M. 2021, "Laine française: des initiatives locales raniment la filière", Marcelle, 16 avril. Available at: <https://www.marcelle.media/laine-merinos-arles-laine-la-plus-fine-deurope/>

"La Race Mérinos d'Arles". *Bulletin Alliance Pastorale* 903, October 2019. Available at: <https://www.alliance-elevage.com/informations/bulletin/bulletin-alliance-pastorale-n903-octobre-2019>

Maison de la Transhumance, *Transhumances de la Provences aux Alpes* (brochure): <https://www.transhumance.org/wp-content/uploads/2022/05/Brochure-Transhumances-Pce-Alpes-2022.pdf>

Michael Del Grande Naturfarsen: <https://animal-fibres.com/>

Qui sommes-nous? La Maison de la Transhumance: https://www.transhumance.org/qui-sommes-nous/presentation-et-fondements/

The Arles Mérinos: <https://arlesmerinos.fr/>

Transhumances de la Provences aux Alpes, brochure, Maison de la Transhumance: https://www.transhumance.org/wp-content/uploads/2022/05/Brochure-Transhumances-Pce-Alpes-2022.pdf

fondements/

Transhumance, the seasonal droving of livestock along migratory routes in the Mediterranean Sea: <https://ich.unesco.org/en/RL/transhumance-the-seasonal-droving-of-livestock-along-migratory-routes-in-the-mediterranean-and-in-the-alps-01470>

3. FLAX

KATARINA ŠRIMPF VENDRAMIN
& VANJA HUZJAN

Flax, which is used to make linen, is an extremely sustainable and recyclable fibre. It is a naturally renewable resource that requires less pesticides and water than other crops such as cotton. The entire flax plant is used so that there is as little waste as possible: the seeds are used to produce oil, while the fibres are processed into linen. Linen is biodegradable and recyclable, thus contributing to a circular economy. Linen textiles are durable and can be reused or composted at the end of their life cycle, which decreases their environmental impact.

Flax has long been an important material in the Alpine region, where its production and processing played a key role in the daily lives of inhabitants. The basic technology of producing flax fabrics and yarns has hardly changed from prehistoric times to the beginning of the 20th century, when flax was still produced for textile purposes in some rural areas. There are small differences between the Alpine regions, e.g., in the form of tools and minor procedural details, but the basis is the same.

In this chapter, we will explore the history and importance of flax production in the Alps, where unique natural conditions and a rich tradition have enabled the development of this activity. Flax, known for its durability and versatility, was essential for the production of clothing, textiles, and other useful items. From the fields where flax was grown to the local workshops where it was processed into fine fabrics, the flax industry contributed to the economic development and cultural heritage of Alpine communities. Over the centuries, the cultivation and processing of flax came to symbolise the perseverance and skill of the people who lived and worked in the area.

In summary, the evolution of weaving techniques and the multifaceted uses of linen highlight the importance of flax in historical textile production, social traditions, and domestic economies.

Field of flax, Wikimedia Commons.

KATARINA ŠRIMPF
VENDRAMIN

3.1. HISTORY

In a poem from the middle of the 11th century, the sheep and the flax plant argue about who is of greater service to humanity, and the flax plant had a stronger argument because it is a very versatile plant.

Some of the earliest traces of linen have been traced back to a prehistoric cave in Georgia, suggesting that the fabric is over 36,000 years old; however, it was the ancient Egyptians and Mesopotamians who were the first to develop a fully organised linen industry. Furthermore, evidence of spinning and weaving flax in Europe dates back to the Neolithic period, potentially predating the use of wool. Flax spread from the Mediterranean and was extensively used in the Alpine region even in prehistoric times.

Flax offered significant advantages as a textile fibre. Peasants who were too poor to raise sheep – whose upkeep required considerable resoures – could still cultivate a small patch of flax. Preparing the thread from flax was labor-intensive but straightforward, demanding little fixed capital. Spinning flax was simpler than spinning wool, and the thread could be woven on small looms. The resulting cloth needed only bleaching, without requiring complex finishing processes.

Classical civilizations extensively used flax for clothing and sailcloth. Plutarch praised flax for providing a smooth and clean attire, fitting for all seasons, light in weight, and resistant to pests. Its ease of laundering was a significant benefit. However, flax was less warm in winter, necessitating supplementation with woollen cloth.

The history of flax production in the Alpine region is a testament to the resourcefulness and adaptability of its people. For centuries, flax was cultivated in these high-altitude areas, providing raw material for durable and versatile linen textiles. The unique climate and terrain of the Alps necessitated specific techniques for flax cultivation and processing. This chapter delves into the evolution of flax production in the region, exploring traditional methods, economic impacts, and the cultural significance of linen in Alpine communities.

3.1.1. PREHISTORY (BRONZE AGE AND IRON AGE)

Flax cultivation has a long history in the Alpine regions. The oldest European archaeobotanical evidence of cultivated flax in the Alpine region comes from the Linearbandkeramik period (5400–4900 BC). These finds, located north of the Alps, provide insights into the early cultivation of flax and its various uses.

Archaeobotanical finds show that flax cultivation, which is already documented for the early Neolithic period, increased in the late Neolithic period. Significant progress was made in agriculture and textile production during this period. Flax cultivation and textile production were present around 4500 BC. especially in Neolithic wetland settlements in the Alpine region, such as at Swiss Lake Constance and in Upper Swabia in south-west Germany,

Reconstructed pile dwellings at the Pfahlbau Museum Unteruhldingen on Lake Constance in Germany. Source: Wikipedia

From the Bronze Age onwards, wool became more important, but flax remained a valuable resource for food, textiles, and oil for over 8,000 years. Its cultural history can be traced on the basis of botanical remains and historical sources. While it is still uncertain whether there were different flax landraces in these early periods, it is clear that flax played a crucial role in the development of Alpine societies.

Terramare, terramara, or terremare is a technology complex mainly of the central Po valley, in Emilia, Northern Italy, dating to the Middle and Late Bronze Age c. 1700–1150 BC. Source: Wikipedia

This studies establishes that different types of flax were probably already being cultivated at that time. This shows that the processing of flax played a significant role in the cultural developments that marked important transitions in agriculture and technology.

Archaeological textile remains from the Bronze and Iron Ages indicate widespread textile production throughout the Alpine region using natural fibres such as wool, flax and nettle. The early Alpine communities used various techniques, including spinning, weaving and braiding. Despite the growing importance of wool, flax and other plant fibres remained an essential part of textile production.

The centres of textile production were usually located in areas with access to necessary natural resources, such as water for the washing and processing the fibres and abundant grazing land for sheep. These regions often had a favourable climate for the cultivation of fibre plants such as flax and nettle.

Archaeological finds indicate the emergence of centres for more intensive textile production in areas such as the Po Valley and the Terramare region in Italy as well as the Alpine foothills near Hallstatt in Austria. These centres were probably characterised by better organised and specialised textile production. In contrast, textile production in other regions remained primarily a domestic activity carried out by women and girls in the household. Each household had its own spinning and weaving equipment, which enabled families to produce textiles for their own use and for trade or exchange with neighbouring communities.

NORD ITALY AND LINEN PRODUCTION

Flax cultivation and textile production have deep historical roots in Italy, especially in the northern Alpine region. Archaeological finds from the Bronze Age indicate that flax was mainly used for textile production alongside tree bast fibres, wool and hemp. These finds indicate that linen production was established in Italy long before Roman times.

Flax appeared in Italy as early as the Neolithic period and was possibly the predominant textile fibre in regions such as the Po Valley. The oldest documented flaxseed in Italy was found in Sammardenchia near Udine. Throughout the Bronze and Iron Ages, flax was cultivated on a large scale in the Po Valley, as evidenced by numerous terramare finds of linen fragments, which point to a flourishing industry in these periods.

In the Bronze Age, durable, breathable and quick-drying linen was used for a variety of purposes, including religious books, sails, tents, food storage, bandages, paintings, wine strainers, curtains, tablecloths, fishing nets, and clothing. The practical and cultural importance of linen continued into the Iron Age. Linen finds in Palse, Montereale Valcellina, and Casale di Rivalta indicate that flax continued to be cultivated and linen produced in the Po Valley.

Experimental weaving activity on vertical weight loom, Terramara di Montale Park. Source: Wikipedia

Flax cultivation requires water and fertile arable land, while sheep can be grazed on land unsuitable for agriculture. The Po Valley, with its wealth of alluvial and clay soils, was naturally suited to flax cultivation. Both sheep and flax thrived in the Po Valley, and the export of these products outside the region was well established at the time of the Terramare and Celtic civilisations. However, the degree of specialisation and the scale of the industry reached unprecedented levels in the Roman period.

The incentives for such specialisation in textile production and trade were cultural, historical, and geographical. Large markets and an increasingly wealthy elite, who demonstrated their status through clothing worn by both themselves and their slaves, fuelled the demand for high-quality textiles. In addition, the Roman practise of labeling textiles after their place of origin contributed to the growth and prestige of the industry.

3.1.2. ANTIQUITY

Textile production in the Alpine region during antiquity was influenced by the cultures and civilizations that inhabited the region during that time as well as the general patterns of textile production in the broader ancient world, especially Roman culture.

In ancient times, textile production in the Alpine regions continued to rely on natural fibres such as wool, flax, and hemp. The cultivation of flax and hemp for the production of linen and other textile fibres was practiced in various parts of the Alpine region.

Textile raw materials in antiquity were generally processed into finished products at or near the site where they were grown, and, accordingly, the distribution of industrial centres largely corresponded to that of raw materials, with only the highest quality unspun raw wool and flax being traded.

The region of the upper and lower Po Valley was identified as a centre of flax production in Italy, where the crop was grown, the fibre processed, and the finished garments sold. Roman writers describe the need for sandy and well-watered, fertile soil to grow flax profitably. Linen fragments are found throughout the western provinces, and small-scale flax cultivation for local consumption was probably widespread.

Textile production in antiquity was still primarily a domestic activity, carried out by women in the household. Spinning wheels and looms were used for the production of yarn and for weaving. The skills and knowledge required for textile production were passed down from generation to generation, ensuring the continuity of this traditional craft.

The textiles produced in the Alpine areas in ancient times served both local consumption and trade. The region's strategic location as a transit route between northern and southern Europe facilitated the exchange of goods, including textiles, with neighbouring regions and beyond.

Before garments made on the loom could be given to the tailor or worn, they had to be finished, which was the job of the fuller. He cleaned woollen cloths of excess lanolin and dirt, a process that also shrank it to a firmer texture and gave it an acceptable surface appearance and feel. Most evidence refers to woollen cloth, but linen was also bleached and polished. Smoothing was used to give fabrics, especially linen, a shiny and even surface. A simple round and smooth tool made of stone or glass was used for this process. Several lead labels, known as tesserae plumbeae, document the existence of a specialized and extensive textile finishing industry. In the Roman world, fullers were mainly found in the cities, where they invested in fixed equipment in small workshops.

The dyeing process was done before spinning and probably after washing. Flax was rarely dyed in at that time. Most known dyers were urban craftsmen such as the fullers.

REPORTS OF THE TIME - PLINY THE ELDER

Pliny the Elder or Gaius Plinius Secundus (23/24– AD - 79 AD) was a Roman writer, naturalist, natural philosopher, as well as naval and military leader of the early Roman Empire. He wrote the encyclopaedic *Naturalis Historia*, which became an editorial model for encyclopaedias. He spent most of his free time studying, writing and researching natural and geographical phenomena in the field. His *Naturalis Historia* provides extensive information on linen production in antiquity, in which he

Pliny the Elder, was a Roman author, naturalist, natural philosopher, naval and army commander of the early Roman Empire. Source: Wikipedia

describes various uses of linen, detailing as well where it was produced in the 1st century AD. According to Pliny, the best linen of his time came from Saetabis in Spain, but northern Italy, especially Lombardy and the Po Valley, were also known for producing high-quality linen. This is consistent with archaeological evidence suggesting that these regions were important linen producing areas long before and during the Roman period.

According to the Roman agricultural writer Columella, flax was one of the most labour-intensive crops, but in northern Italy it could be sown in spring and harvested in summer. The Po Valley benefited from access to important natural resources such as water for processing the fibres and a climate suitable for growing flax. Although there is no evidence that textile production in Italy reached an industrial level of organisation before Roman times, the scale of production went far beyond the simple subsistence level. Written sources and archaeological finds testify to extensive and high-quality linen production in northern Italy during this period. In contrast, textile production in other regions remained a domestic activity, often carried out by women in the household.

The cultural context of flax production also included a gender-specific division of labour. Traditionally, spinning was considered women's work, but the writings of Pliny indicate a change, portraying that men also spun flax, a task that was highly valued due to the higher quality of linen compared to wool. This adaptation emphasises the economic importance of flax. Pliny's text points to a modification of these distinctions, at least in a small way. Reclaiming flax spinning for men, which involved defeminizing this aspect of flax processing, allowed men to participate in a lucrative and valued practice

This illuminated manuscript page of *Historia naturalis* written in Latin shows Pliny, crowned with laurels, seated in a landscape with a book in his hand. Source: Flax: First Fiber of the Arts

3.1.3. LATE ANTIQUITY AND EARLY MIDDLE AGES

During late antiquity and the early Middle Ages (400 AD - 800 AD), the Roman Empire and its legacy had a significant influence on the linen industry in the Alpine region. The production techniques and trade networks established during the Roman period continued to play a significant role. Linen was used for clothing, household textiles and even shrouds.

Flax cultivation was still important in regions such as the Po Valley, which offered the necessary agricultural conditions. Northern Italy, with its well-developed trade routes, was an important hub for the distribution of linen textiles. The linen produced in this region was traded across the Mediterranean and to other parts of Europe. While the long-distance trade networks were interrupted during the early Middle Ages, local and regional trade continued.

With the decline of the Roman Empire, many urban centres in northern Italy experienced a decline. However, linen continued to be produced in rural areas, maintaining the continuity of the industry, as linen remained an important textile for the local economy, used for clothing, household goods and liturgical purposes. Linen production was embedded in the rural economy and often involved entire households. It provided farming families with

Roman tombstone with man spinning flax. Source: Fibre Feast

an additional income and was an important part of the subsistence economy.

In the early Middle Ages, flax cultivation and linen production continued, albeit on a smaller scale than in Roman times. Monasteries became important centres for linen production during this period. Monasteries played a key role in preserving and passing on textile production techniques. They cultivated flax, processed it, and produced linen for their own use and for trade, often in their own workshops, the *gynacea*.

There were hardly any innovations in the technological aspects of linen production during this period. The methods remained largely traditional, with manual labour playing an important role.

CHARLEMAGNE FLAX PRODUCTION

Charlemagne, also known as Charles the Great (742/9-814), was a very important king in European history, particularly in relation to agriculture and the economy. His policy of promoting the cultivation of flax and the production of linen had numerous consequences that went beyond material goods.

Charlemagne carried out agricultural reforms that promoted the cultivation of flax. In 789, he issued a decree that all households had to grow flax and weave their own linen fabric. The tradition of families making clothing, bed linen, and home textiles at home continued into the 18th century.

In addition, Charlemagne's administration encouraged land clearance, drainage, and the establishment of monastic estates, which contributed to increased flax cultivation, as many monasteries had workshops where textiles, including linen, were produced. These workshops played a crucial role in the medieval textile industry.

Flax became an important raw material in the Carolingian economy, as it was essential for the production of clothing, bed linen, ropes, and other everyday items. This diversity of use ensured market value and economic stability. In addition, the promotion of flax cultivation and linen production increased the demand for labour and thus promoted employment and economic growth.

Flax was also important in the military sector. As a material for the production of ropes and sails, it played a crucial role in maritime activities and military operations. Therefore, the promotion of flax cultivation also had a strategic value for the military power and security of the empire.

Flax was also associated with hygiene and health aspects. The clean nature of the linen fabric and the medicinal properties of linseed oil helped promote a healthy lifestyle among the population.

Scenes from the life of Charlemagne (742-814) king of the Franks: the emperor visits women spinning. Source: Meisterdrucke

It is important to emphasise that Charlemagne's agricultural reforms were adapted to local conditions and needs, which was crucial to their long-term success. Adaptations made in the Alpine regions probably included the use of specialised flax varieties, cultivation techniques and processing methods suited to the colder climate and mountainous terrain.

Together with Charlemagne's reforms, flax became a fundamental part of the economy and culture of medieval Europe. Its use went beyond practical needs and symbolised power, wealth and the progress of the empire.

This painting from the 14th century Italy Medieval handbook *Tacuinum sanitatis* showing use of linen fabric. Source: Wikipedia

3.1.4. MEDIEVAL PERIOD

During the Middle Ages (800 AD – 1500 AD), textile production in the Alpine regions continued to play an important role in the local economy. Initially, the industry focused mainly on the production of woollen textiles, with wool being the dominant fibre. However, flax and hemp were also used, albeit to a lesser extent.

In the 13th century, the production of flax and hemp increased, which led to a resurgence in linen production. While important centres such as the Po Valley in Italy saw a decline in linen production during this period, Switzerland and southern Germany became important centres. From these regions, linen production spread to northern Germany and eastwards to the Slavic regions. Linen weaving was initially a rural trade. From the Middle Ages onwards, the fabrics made from linen and flax were increasingly used as peasant tributes to rulers.

Farmers made their own linen in winter, and this remained an important farming activity in some areas until the end of the 19th century, as spinning and weaving was possible on a small scale. Linen clothing was also in demand in warmer climates as an alternative to wool and hemp.

The linen trade was a highly significant economic practice for medieval Europe. The cultivation of the flax plant, which only thrives on rainwater, had become widespread as early as the 13th century. In the Middle Ages, entire regions of Europe were focused on the production and sale of linen. By the 13th century, linen weaving industries were established in most towns. Guild-organised craftsmen and contract weavers wove the fabric, and the expansion of the linen trade led to the development of quality standards.

From the 16th century onwards, the regions around Lake Constance in Switzerland, Škofja Loka in Slovenia, and southern Germany became important linen producers. Even the powerful House of Fugger in Augsburg, which controlled a large part of the European economy in the 16th century, acquired considerable wealth through the linen trade. The linen industry had a major impact on the economic development of all the major linen-producing regions, with the production and trade of linen fabrics on a large scale. The industry also contributed to the prosperity and economic stability of the regions where linen was an important commodity.

Jakob Fugger (1459-1525) and his accounts clerk, Matthäus Schwarz (1497-1574), at the Fugger headquarters on the Rindermarkt in Augsburg, ca. 1520. Source: Swiss National Museum

FUSTIAN - SOURCE OF WEALTH

Fustian (Barchent in German) was an ancient fabric made of flax and cotton that originally came from the Middle East but was soon imitated in Italy and Germany. Its importance grew from the late 12th century, especially in areas such as Augsburg, Ulm, and Nuremberg.

Early fustians were smooth fabrics that were slightly thickened on one side and had a soft pile. Over time, a ribbed, velvety surface developed. During production, "floating threads" were used in the weft, which were later cut by hand with a fustian knife or by machine, and the fabric was brushed, shorn, punched, bleached, and dyed.

The techniques used to make fustian had long been known in northern Italy as imports of cotton from the eastern Mediterranean to Venice and Genoa were part of the Levant trade. From the 12th century onwards, cities such as Venice and Lombardy adopted fustian production techniques from Arab countries. The centres for fustian production in Italy were close to each other, which facilitated the spread of these techniques. The area stretching from Pavia, Piacenza and Cremona to Verona, Padua, and Bologna became a centre of linen and fustian production. In the 11th century, the linen trade expanded beyond the local markets to include long-distance trade.

Europe in the 'Cosmographia' by Sebastian Münster, first published in 1544, Europe is still upside down, with the north below and the south above. Augsburg is at the centre of what was then Europe's most important trade route by land, from Venice to Antwerp via Augsburg and Nuremberg. Source: Swiss National Museum

In the early 14th century, the cotton trade became more lucrative for Italian merchants than cloth production itself. German merchants revitalised the production of fustian due to the highly developed textile trade in southern Germany. The Black Death in Italy led to a decline in the population and a shift in local textile production to luxury fabrics. The absence of the plague and several other reasons in Old Bavaria and Eastern Swabia meant that these regions were suitable for the mass production of fustian due to the abundant availability of labour. The Augsburg textile industry became the economic lifeblood of the region, as many inhabitants worked in cloth production. The Via Claudia Augusta trade route facilitated the transfer of fustian production to southern Germany, and Augsburg became an important centre in the early 1370s.

Closely associated with Augsburg and its fustina production is the Fugger family, who controlled much of the European economy in the 16th century and became by far the richest family in Europe, deriving their wealth from the linen and fustian trade. The history of the family begins in 1408 with Hans Fugger, who was a wool and linen merchant and employed 50 weavers. His son Jakob, himself a weaver, expanded into the trade and began issuing bills of exchange. Jakob and his brothers built up the family's banking business throughout Europe, which was built up with the proceeds from the textile business. They often accepted mining companies as security for payments and had a monopoly on the transfer of funds collected by the Catholic Church in Germany and Scandinavia through the sale of indulgences. With the money from the textile trade, Jacob Fugger amassed the greatest fortune of his time.

3.1.5. EARLY MODERN PERIOD (1500-1800)

During the Early Modern Period (1500-1800), linen became a valuable commodity that was traded throughout Europe, with the Alpine region playing an important role in this trade network.

Much of the linen production during this period remained a domestic industry, with families growing flax and processing it into linen for their own use or for local trade. In many parts of the Alpine region, linen production was an important rural industry that provided additional income for farming families and played an important role in the rural economy, especially in areas that were less suitable for other forms of agriculture.

The putting-out (Verlag) system became common for larger production capacities, moving production to the countryside in order to obtain cheaper labour and freedom of craftsmanship without guild restrictions. This structure persisted, with some changes, until industrialisation in the early 19th century.

One of the most important centres of linen production in the Alpine region at the time was St. Gallen in Switzerland, which developed into an important economic centre in the middle of the 15th century. While Italian fabric manufacturers lost their lead over German goods due to lower prices, they were able to maintain their market share thanks to higher quality dyeing and finishing.

The Industrial Revolution centralised linen production in cities, reducing the need for manual labour and increasing efficiency; as a result, large-scale production shifted from rural households to factories. A significant event that contributed to the spread of knowledge occurred in 1685, following the revocation of the Edict of Nantes in France. More than 6,000 Protestant weavers and lace makers fled to the Netherlands, Switzerland, Germany, England, and Ireland and passed on their knowledge of linen production.

Linen was an important export and its fine quality made it desirable for clothing, household textiles, and trade. Flax became sought-after because it was significantly associated with cleanliness, which carried growing cultural weight in early modern Europe. In the 1700s, most people of upper-class rarely bathed, but kept themselves "clean" by changing the white linens under their clothes. The idea of cleanliness centred on clothing, especially garments worn directly against the skin. It was believed that white linen clothing would absorb the body's impurities and cleanse the skin in the process. Starched white collars and cuffs often extended beyond the outer garment, signalling the cleanliness of the body beneath and implying social superiority. This concept of cleanliness gradually spread from the upper class to the emerging middle class. Because of these cultural associations, linen and especially linen-cotton blends paved the way for the further spread of cotton fabrics in the nineteenth century.

Linen strips laid out to bleach outside St. Gallen's city walls in 1545. The names of areas in St. Gallen such as “Bleicheli” or “Kreuzbleiche” (“Bleiche” is bleach in German) serves as a reminder of when the city was a textile centre. Source: Wikipedia

WHITE GOLD OF ST. GALLEN

Flax cultivation and linen production have a long history dating back to the Neolithic period in present-day Switzerland. But while linen production remained economically insignificant in large parts of the Swiss Confederation, eastern Switzerland with the cantons of Bern and Lucerne was an exception. Eastern Switzerland became part of an important linen-producing area that encompassed the Lake Constance region between the rivers Thur, Danube, and Lech. From the 11th century onwards, a linen trade developed in this region that expanded beyond the local markets to include long-distance trade. Constance was initially the leader in this

Sequence of images on the processing of flax into linen from St. Gallen. Second half of the 17th century. Source: Kulturmuseum St. Gallen

Linen weavers, from so called Gallery of the finest arts. 1820. Source: IMAGNO/Austrian Archives

industry, but St. Gallen became an important centre for linen production and distribution in the Middle Ages.

The production of flax in St. Gallen is well documented and is mentioned in the monastery's records from the 9th century onwards. Between the 13th and 17th centuries, linen production developed into an important economic sector in the region. Tens of thousands of people were employed in the cultivation of flax, the spinning of yarn, and the weaving of linen, which was then bleached and refined to increase its value. The guilds and municipal authorities ensured high production standards through strict regulations and quality controls.

The weavers, mainly farmers who worked from home, were regulated by a system of brokers with the "Leinwandschau", where merchants exhibited their wares. The quality standards set by the traders influenced pricing and ensured that the linen produced met high standards. The St. Gallen linen products were labelled with symbols such as 'G' for the best quality, a crab, a red cross, a black cross, or '0' for inferior quality.

By the middle of the 16th century, St. Gallen was producing around 20,000 lengths of cloth a year, each almost 100 metres long and one metre wide. In 1610, production peaked at 23,622 lengths of linen of the highest quality. The region's linen fabrics were known worldwide, and St. Gallen merchants traded these goods via various cities (Padua, Milan, Frankfurt am Main, and Nuremberg) and harbours (such as Venice, Genoa and Antwerp) throughout Europe, North Africa, and Asia. They would exchange fabrics for spices, jewellery and silk.

The 17th century brought numerous challenges, including the Thirty Years' War, which disrupted markets and led to a severe crisis in the linen trade. Although production never returned to pre-crisis levels, the industry enjoyed a period of prosperity. In the 18th century, however, cotton began to replace linen, which led to the decline of the linen industry. By the 1730s, cotton had largely replaced linen, and the textile region of St. Gallen switched to cotton processing and later to embroidery.

3.1.6. THE LONG NINETHEENTH CENTURY

During the expanded 19th century period (ca. 1789-1914), the linen industry in the Alps underwent significant changes influenced by industrialisation, technological progress, and shifts in economic and social structures.

With the advent of the machine age, the culture of linen weaving in Europe began a steady decline. Manual labour, which is essential for flax, became increasingly expensive. The rapid development of the cotton and later the synthetics industry further displaced flax and made pure linen increasingly rare.

The industrial development of flax production was surpassed by the cotton industry, which dominated the European market with its mechanised production, offering cheaper products and suppressing the

linen trade. in 1810, to undermine England's mechanised cotton production, Napoleon offered a prize of one million dollars for the invention of a machine that could process linen yarn like the established cotton machines. The invention of the first practical flax spinning machine by the Frenchman Philippe de Girard in 1810 marked the beginning of the industrial revolution in linen production.

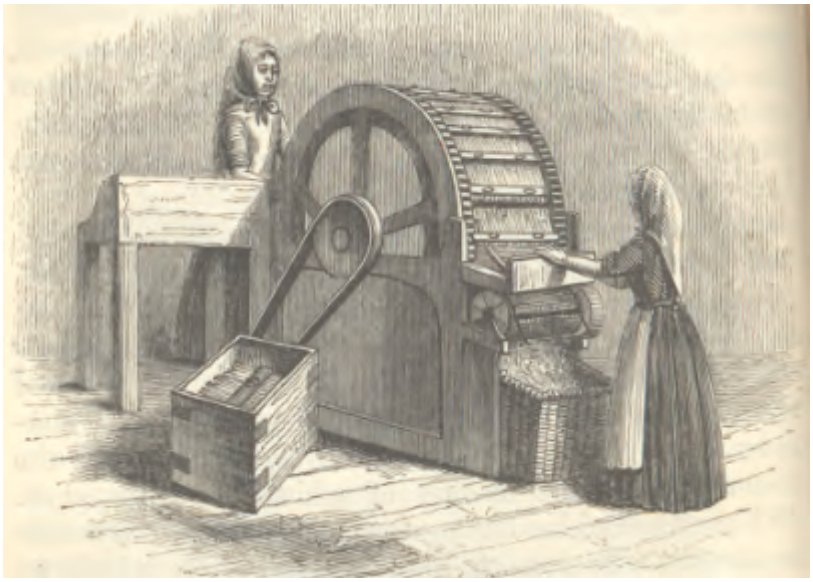
Despite these advances, the production of linen remained largely manual until the 1830s, when mechanical devices began to emerge. However, the production costs for machine-made yarn were not significantly lower than for hand-spun yarn. The machines were complex, expensive, and often imported. Products included canvas, yarn, ropes, ribbons, and waxed linen, which were produced both for domestic use and for sale.

The growth of the linen industry during the Industrial Revolution was hampered by several factors. The quality of flax grown in the Alps could not compete with that of English flax. The ratio of waste to usable fibre was much higher for Alpine flax than for English flax, making it less efficient and profitable. In the second half of the 19th century, linen production declined in areas such as Škofja Loka, Lombardy, and Veneto due to competitive disadvantages. Nevertheless, flax production in Lombardy provided employment for around 300,000 women who spun flax at home using traditional methods and earned meager wages.

Flax cultivation in the Alpine region did not manage to fully modernise and convert to industrial production. While there was some modernisation, it was limited and production often did not meet local demand, so raw materials had to be imported from Egypt and other countries. Cotton, with its mechanised and cheaper production methods, became a major competitor.

In some rural and mountainous areas of the Alpine region, flax was still grown mainly for local consumption until the early 20th century. Traditional methods were retained in order to maintain a link with the past and create a niche market.

Despite these challenges, the association of linen with cleanliness and high social status remained. Linen starched garments, collars and cuffs remained in fashion, especially among the upper



Hecking machine used in factories around 1840. Source: Revolutionary players

Appenzell weaver couple at the handloom around 1830, the most important tool until around 1850. Source: Wikipedia

Processing of flax. Around 1825. Lithograph by Jos. Trentsensky. IMAGNO/Austrian Archives

classes. In the 19th century, linen retained its status as a luxury item, particularly in the form of finely embroidered tablecloths, napkins and bedcovers. These items were symbols of wealth and sophistication and emphasised the enduring cultural importance of linen.

LINEN PRODUCTION IN THREE NEIGHBOURING ALPINE REGIONS

Linen production in the Austrian Hungarian Monarchy, especially in Austria, was historically significant and was promoted by state initiatives. After losing its leading position due to wars (the War of Succession, in which Austria lost Silesia) and competition from mechanised produced cotton, Austria attempted to revive its linen industry through patents and reforms already under Maria Theresa and Joseph II. Innovations such as Philippe Girard's linen spinning machine were introduced, but traditional methods remained due to the advantage of using domestic raw materials. The production of linen was particularly important in the following Alpine regions: Carnia (today in Italy), Carinthia (today in Austria) and Carniola (today in Slovenia).

Jacopo Linussio and the spinners of Carnia (anonymous painter, 1769). Source: Museo Carnico

From the second half of the 18th century, around 100,000 women worked as flax, hemp, and cotton spinners in Venetian Friuli, particularly in Carnia, thus playing an important role in the regional textile production economy. They mainly worked with manual spinning methods and were often employed in factories such as the one of Jacopo Linussio located in Tolmezzo, Carnia. As linen production was scarce in the Carnic regions, linen was imported from various places such as Lombardy (Brescia and Cremona), regions beyond the Alps (Carinthia, Carniola, and northern German regions) and also from harbours such as Venice, where raw material was imported from Aleppo in Syria and Alexandria (Egypt). The manufactories in Cividale also managed to obtain linen from Slovenian villages along the upper Isonzo River. To do so, they utilised the authority of the local lords and canons, who even revived the medieval tithe obligation for linen, which disadvantaged local mountain farmers.

The Carnic artisans spread this "excellent and rare" craft throughout Europe. This sector, which played a central role in Carnic economic life for centuries, still has some high-quality productions today.

Woman at the spinning wheel, Windisch Bleiberg. Source: Slovenski etnografski muzej

In the first half of the 19th century, linen and hemp production in Slovenian regions remained largely at the domestic and cottage industry level, with a few exceptions in Carinthia and Primorska. For commercial purposes, linen was mainly produced in Upper Carniola (Gorenjska) and Inner Carniola (Notranjska), especially in towns such as Škofja Loka, Smlednik, Velesovo, Radovljica, Bled, Snežnik, and Bistra. In the late 1830s, linen weaving developed especially in the vicinity of Škofja Loka, Velesovo and Smlednik.

Whole villages were engaged in spinning on hand looms and producing yarn, which was then woven into pure linen. Both bleached and unbleached linen was produced for domestic and

commercial use, although some higher quality fabrics were also available, but the main export article was sailcloth. These products were sold in large quantities in the harbours of Trieste and Rijeka. Around 70 linen merchants sold at least 7,000 pieces of white line

n and 25,000 pieces of commercial linen every year. The district of Ljubljana alone produced linen worth 78,000 guilders, more than was needed for its own requirements. The linen produced was mostly coarse.

Carinthia, in today's Austria, served as a hub between Carniola and Carniola, from where both regions imported raw materials. Linen production developed in the area around Landskron and Rosegg. Rosegg in particular had lively trade with Tyrol, Italy, Styria, and Carniola, although this declined in the years following the Napoleonic Wars. Similarly, sailcloth production in the area around Rosegg and Finkenstein also ceased and only survived in a few areas that exported to Rijeka and Trieste.

3.1.7. FROM THE TWENTIETH CENTURY ONWARDS

Flax and linen production in the Alpine regions underwent significant changes in the 20th century and continue to do so today.

At the beginning of the 20th century, the trends from the late 19th century continued as mechanisation and industrialisation became firmly established. Flax cultivation and linen weaving in the Alpine regions were already in decline due to competition from cotton and synthetic fibres, which were cheaper and more efficient to produce.

Both the First and Second World Wars had a significant impact on agriculture and industry. Flax cultivation was disrupted by the destruction of farmland and the diversion of labour and resources to the war effort. In the post-war reconstruction phases, flax cultivation was temporarily revived as part of wider agricultural reconstruction programmes.

In the middle of the 20th century, traditional flax and linen production was further marginalised by technological advances in agriculture and textile production. The greater popularity of synthetic fibres such as nylon and polyester offered cheaper and more versatile alternatives, which led to a further decline in demand for linen.

Despite this general decline, there was a resurgence of interest in natural fibres, including linen, towards the end of the 20th century. This resurgence was driven by niche markets focusing on sustainability, organic farming, and artisanal products. High-quality linen products, especially those associated with traditional craftsmanship, found a market among consumers looking for luxury and eco-friendly options. While some Alpine regions are not dominant players in the global market, they have carved out a niche for high-quality, handcrafted linen products.

Linen industry. Source: Shutterstock

Efforts to preserve traditional flax growing and linen weaving have emerged, often supported by cultural heritage organisations and local governments. The cultural heritage of flax and linen production in the Alpine regions is preserved and celebrated. Festivals, workshops and museums dedicated to this tradition attract tourists and educate the public. Some regions in the Alps have used their historical connection with linen to promote tourism and local crafts, such as Davča near Škofja Loka in Slovenia.

In the 21st century, consumers have increasingly emphasised sustainability and environmental friendliness. Linen, as a natural and biodegradable fibre,

In March 2018, Linificio e Canapificio Nazionale sowed two hectares of its prestigious flax within the exclusive agricultural area of Astino. Source: Linificio

has benefited from this trend. Interest in traditional textiles has been revitalised by the slow fashion movement and the desire for durable, high-quality clothing and household goods.

The sustainable fashion movement continues to drive interest in natural fibres such as linen. This trend is likely to benefit the Alpine regions, which are known for their high-quality production. Collaboration between designers, artisans, and farmers is encouraging the innovative use of linen in fashion and homeware.

In summary, flax and linen production in the Alpine regions has through history evolved from a dominant agricultural activity to a niche market characterised by high-quality, sustainable, and artisanal products. The cultural and historical significance of linen continues to be celebrated, and modern trends in sustainability and environmental friendliness are generating renewed interest in this traditional fibre.

»LINO DI ASTINO«

Until the Second World War, linen was an important crop in northern Italy alongside with hemp. Companies such as Linificio e Canapificio Nazionale, which was founded in Bergamo in 1873, flourished with the cultivation and spinning of these fibres.

Linificio e Canapificio Nazionale had the ambitious dream of reintroducing hemp and linen to the fields of Lombardy after more than 60 years. Their unique expertise with a focus on sustainability has led to the successful resumption of local flax cultivation. In March 2018, Linificio e Canapificio Nazionale sowed two hectares of high-quality linen in the exclusive agricultural area of Astino in Bergamo. As part of this project, 100% Made in Italy and zero-kilometre yarn were produced in limited editions, creating fabrics of the highest quality. This initiative promoted local production and collaboration between cultural associations and companies, contributing to regional growth and sustainable practises.

Today, linen cultivation, harvesting, and processing techniques are constantly evolving to meet modern consumer demands for sustainability, quality, and beauty. Linen is not only used for fabrics in fashion, packaging, and home textiles, but also for other products. For example, flax tow (the coarse part of the flax plant) is used for papermaking and to make ropes and twine, demonstrating the versatility and importance of this plant in our daily lives.

SOURCES:

Baines, P. 1985. Flax and Linen. Princes Risborough: Shire.

Braudel, F. 1988. Strukture vsakdanjega življenja: mogoče in nemogoče: Materialna civilizacija, ekonomija in kapitalizem, XV.-XVIII. stoletje. Ljubljana: Založba ŠKUC: Znanstveni inštitut Filozofske fakultete.

Braudel, F. 1989. Igre menjave: materialna civilizacija, ekonomija in kapitalizem, XV.-XVIII. Stoletje. Ljubljana: ŠKUC: Znanstveni inštitut Filozofske fakultete.

Carolynn, E. Roncaglia. 2018. Northern Italy in the Roman World: From the Bronze Age to Late Antiquity. Baltimore: Johns Hopkins University Press.

Dijkman, J. 2011. The Fabric of Society: The Organization of Textile Manufacturing in the Middle East and Europe, c. 700 – c. 1500. Leiden: Brill. Available at:

Gällnö, Sophie. 2013. "(In)visible Spinners in the Documentary Papyri from Roman Egypt." In: Making Textiles in Pre-Roman and Roman Times: People, Places, Identities, edited by Margarita Gleba and Judit Pásztókai-Szeőke, 60-86. Oxford: Oxbow Books.

Halbauer, E.M., Bohinec, V., Wittenberger, M., Hansel-Hohl, K., Gaubitzer, S. and Sehr, E.M., 2017. Genetic diversity of flax accessions originating in the Alpine region: a case study for an ex situ germplasm evaluation based on molecular marker. *Euphytica*, *213*, pp.1-16.

Gilroy, C. G.1845. The History of Silk, Cotton, Linen, Wool, and Other Fibrous Substances including Observations on Spinning, Dyeing, and Weaving. New York: Harper & Brothers.

Gleba, Margarita, and Ulla Mannering, eds.** 2012. *Textiles and Textile Production in Europe from Prehistory to AD 400.* Ancient Textiles Series, vol. 11. Oxford: Oxbow Books.

Gleba, M., and J. Pásztókai-Szeőke, eds. 2013. *Work and Identity: The Agents of Textile Production and Exchange in the Roman Period. Archaeological Textiles Series 13. Oxford: Oxbow Books.

Gostencnik, K.c2013. "Textile Production and Trade in Roman Noricum." In: Work and Identity: The Agents of Textile Production and Exchange in the Roman Period, edited by Margarita Gleba and Judit Pásztókai-Szeőke, 60-86. Oxford: Oxbow Books.

Grömer, K.. 2016. The Art of Prehistoric Textile Making: The Development of Craft Traditions and Clothing in Central Europe. Vienna: Naturhistorisches Museum. Available at: https://library.oapen.org/handle/20.500.12657/32825

Harlow, Mary, ed. 2018. A Cultural History of Dress and Fashion in Antiquity. London: Bloomsbury Academic.

Heller, Sarah-Grace, ed. 2018. A Cultural History of Dress and Fashion in the Medieval Age. London: Bloomsbury Academic.

Hoffmann, J. Wesley. 1923. The Commerce of the German Alpine Passes During the Early Middle Ages. In: Journal of Political Economy 31* (6): 701–738. Available at: https://doi.org/10.1086/253565

Jakob Fugger – Money and spirit around 1500.** 2020. *Swiss National Museum Blog*. Available at: https://blog.nationalmuseum.ch/en/2020/03/jakob-fugger-money-and-spirit-around-1500/

Jenkins, David, ed. 2003. The Cambridge History of Western Textiles, Volume 1. Cambridge: Cambridge University Press.

Kaczmarek, Z. 2017. "Textile Production and Consumption in Roman Provinces and in Free Germania – A 21st Century Perspective." *Studia Europaea Gnesnensia 16 (16): 153–182. Available at: https://pressto.amu.edu.pl/index.php/seg/article/view/30079

Karg, S. 2011. "New Research on the Cultural History of the Useful Plant *Linum usitatissimum* L. (Flax), a Resource for Food and Textiles for 8,000 years." In: *Vegetation History and Archaeobotany 20*: 507–508. Available at: https://doi.org/10.1007/s00334-011-0326-y

Kelley, A. C. 2023. "Searching for Professional Women in the Mid to Late Roman Textile Industry." *Past & Present 258* (1): 3–43. Available at: https://doi.org/10.1093/pastj/gtac007

Kozlowski, R. 1989. Flax in Europe: Production and Processing: Proceedings of the European Regional Workshop on Flax.Poznan, Poland: Food & Agriculture Organization of the United Nations.

Lemire, B. 2010. The British Cotton Trade, 1660-1815. London: Pickering & Chatto.

Pliny the Elder. Wikipedia. Available at: https://en.wikipedia.org/wiki/Pliny_the_Elder

Kießling, R. 2020. "From Upper Italy to Swabia: A Fourteenth-Century Case of Geographical Shifts in Production and the Structural Evolution of an Economic Sector." *Bavarian Studies* - 2020/1-2. Available at: https://www.bavarian-studies.org/2020-kliessling/

Sabatini, S. and S. Bergerbrant, eds.** 2019. *The Textile Revolution in Bronze Age Europe.* Cambridge: Cambridge University Press.

Selling Textiles in the Long Eighteenth Century: Comparative Perspectives from Western Europe.** 2014. Edited by Jon Stobart and Bruno Blondé. London: Bloomsbury Academic.

Stromer, Wolfgang.** 1986. "Gründung der Baumwollindustrie." In: *Gewerbereviere und Protoindustrien in Spätmittelalter und Frühneuzeit*, edited by Hans Pohl, 39–111. Stuttgart: Hans Pohl.

Sutton, Anne F. 1999. "Some Aspects of the Linen Trade c. 1130s to 1500, and the Part Played by the Mercers of London." *Textile History 30* (2): 155-175. Available at: https://doi.org/10.1179/004049699793710589

Textile Production in Europe: Lace, 1600–1800. 2018. Metropolitan Museum of Art. Available at: https://www.metmuseum.org/TOAH/HD/txt_l/hd_txt_l.htm

The Big Book of Flax: A Compendium of Flax Facts, Art, Lore, Projects and Song. 2011. By Christian Zinzendorf and Johannes Zinzendorf. Atglen, PA: Schiffer.

The History of Linen. 2020. *The Modern Dane*. Available at: https://www.moderndane.com/blogs/journal/the-history-of-linen

The Linen Trade: Ancient and Modern.** 2009. By Alexander J. Warden. New York: Cornell University Library.

The North Italian Cotton Industry 1200-1800.** 2018. By Maureen Fennell Mazzaoui. London: London School of Economics. Available at: https://www.lse.ac.uk/Economic-History/Assets/Documents/Research/GEHN/Helsinki/HELSINKIMazzaoui.pdf

Tomaszewski, M. 2020. "Practices and Dependencies. Research Perspectives on the History of Proto-Industrial Labour and the St. Gallen Linen Industry (1450-1700)." RiSES – 2020 (1-2).

University of Basel. 2022. "7,000-Year-Old Grains Hints at Origin of Swiss Pile Dwellings." Available at: https://www.sciencedaily.com/releases/2022/03/220302110629.htm

White, L. Jr. 1966. Medieval Technology and Social Change. Oxford:

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3.2.FROM FLAX TO LINEN

The transformation of flax into linen fabric is a remarkable process that highlights both traditional craftsmanship and modern techniques. It begins with the cultivation of flax plants, which are then harvested and retted to separate the fibres. These fibres are cleaned, spun into yarn, and woven into linen fabric. Linen has been a valued textile for centuries and is known for its durability, breathability, and sustainability. In this chapter, the individual steps of linen production are presented using ethnographic data, mainly from Slovenia, which show the complicated path from the flax plant to the finished linen fabric.

3.2.1. FROM FLAX TO YARN

In Europe today, two primary types of flax are grown: fibre flax and linseed flax. Fibre flax, primarily used for textile production, is cultivated mainly in France, Belgium, and the Netherlands, which together account for about 75% of the world's production of long flax fibres. This type of flax is highly valued for its quality and is the main ingredient in producing linen. On the other hand, linseed flax is grown primarily for its seeds, which are used to produce linseed oil and other byproducts.

Several varieties of flax are particularly well-suited for fibre production due to their long, strong fibres and adaptability to different growing conditions. In the past the most important type of flax was *Linum usitatissimum*, common flax or linseed, which was cultivated for both its fibre and seeds. It grows 70 to 130 cm high, depending on climate, soil conditions, and fertilization. Flax yields 75% straw, 11% seeds, and 14% husks. For 100 kg of yarn, 700 to 800 kg of flax straw are needed.

The time of sowing depended on whether spring or winter flax was sown. Sowing in spring was better for yarn (March, April or May), as the stem was tall and produced a strong yarn. Flax for yarn had to be sown thickly, in Davča they said that nine grains should fit under a thumb. It was also believed that it was necessary to take long steps during sowing in order for the flax to be long. In May, they sowed so called spring flax, which was more suitable for oil. Winter flax, which contained more seeds, was sown in the late summer and early autumn (August, September, or October). Spring flax was of two types of flax: the short flax had more seeds and finer fibres, while the long flax had stronger fibres.

Flax on meadow. Source: Slovenski etnografski muzej

Spring flax was sown towards the end of April or early May, and winter flax in the second half of August or September.

The flax soil is very depleted, so it was sown only every sixth year in the same field. The best seed for sowing was three to five years old. With dense seeding (nine seeds to an inch), the stem is taller, slimmer and less floppy. The non-vegetable part of the stem is important for the production of yarn. It would bloom by the end of June, when about a meter high. Flax took 90-100 days from sowing to maturity, when the stem is yellowish and instead of flowers there are tiny heads with seeds).

Spring flax was pulled in late August or early September – they harvested it only when it was planted for seed and not for yarn. The bundles of flax were then taken to the haystack, where the flax was dried for 14 to 21 days. When

Rippling of flax. Source: Slovenski etnografski muzej

the flax was dry enough, the seed heads were removed on the riffle, and then the dried flax was taken to the mowed meadow for field retting. It was spread over the meadow and left for two to three weeks to loosen the fibres from the rest of the plant. After retting, the stalks must be dried again before it is possible to break them.

The flax had to be scutched to remove the seed pods. This task was not easy and was therefore usually performed by younger men. The device, which was attached to a long wooden bench, consisted of long metal teeth set into a solid board. Two men sat on either side of the bench and pulled several stalks of flax through the metal teeth, as much as they could manage at once. The seed pods fell onto a leaf spread out below. The stalks were then separated from the capsules by hand. In some places, the dried flax was placed on a support, such as a beam resting on two horses, or on some other type of rack, and beaten with a wooden hammer or flax beater to separate the seeds from the stalks. However, this method often damaged the stems. The dried capsules were crushed with a beater to extract the seeds, which were then beaten off with a flail or cleaned and strained through a sieve to remove impurities.

The bundles without seed capsules were taken to a mowed meadow, where they were untied and spread out in rows. There they were exposed to sun and rain for three weeks to allow the sticky substances between the bark, wood and pith to decompose and break the bonds between the individual fibres. In some places they were soaked in special basins or rivers and streams. The raw material for linen yarn is the flax straw, which is found on the outside of the flax stalk. When the flax had become brittle and gray, it was gathered and tied into bundles with ropes or straw and brought home to the barn or under the eaves. In October, when the weather was fine, the retting process would begin. The flax stalks had to be further dried and heated. They were dried in retting pits or drying sheds, smaller quantities of stalks were also dried in the hearth openings of the bread ovens in the black kitchens.

The dried flax was crushed with flax crushers. A flax crusher is a tool resembling a large pair of scissors, about one to one and a half meters long and 20 cm wide. It consisted of five thin boards. The flax fibres were stacked in pairs and tied together in a bundle. They tied twelve bundles together. The discarded or lower-quality flax fibres were used for stuffing quilted blankets and horse pads. Flax tow was used to line beehives to prevent ants from crawling inside. Most of it was used as bedding for animals.

Women crushing flax with crushers. Source: Kamra

The broken and smoothed flax fibres were transported home and stored in the attic or the upper part of the barn. In November or December, the women would scutch or hackle the flax fibres. To do this, woman used a hackling comb attached to wooden benches. They pulled a handful of flax through the teeth of the comb to clean and separate the fibres. During this process, the lowest quality fibres and tow remnants would fall out and were used for coarser spinning. The long-stranded flax remained attached to the teeth of the comb and was used for spinning thicker threads, which were

Fibers ready for spinning. Foto: Katarina Šrimpf Vendramin

then woven into sacks and cloth. The cleaned flax fibres, which were formed into bundles, consisted of the finest and longest fibres that remained in the hand while hackling. They were placed on a table, and when the pile of fibres was high enough, a stick was pulled through it, wrapping the fibres around the stick and twisting the sides inward. This produced a bundle of cleaned flax, which was then placed on the distaff of the spinning wheels for spinning. Well-combed flax had a silky sheen, while lower-quality fibres were dull or lacked lustre and were used for coarser spinning and other purposes.

3.2.2. FROM YARN TO THREAD

During the winter months, women would spin yarn, beginning around Christmas and continuing until Shrove Tuesday. Initially, they spun by hand, which involved attaching fibres to intricately carved wooden distaffs placed under their armpits or attached to their belts. They twisted the fibres between their fingers and wound the spun thread onto wooden bobbins. By the 19th century, spinning wheels became common in Slovenia, allowing spinning and winding to be done simultaneously.

To create a thread, the spinner selected the finest fibres, spun a thin thread, and then twisted two or more threads together to make yarn. This yarn was used for sewing clothes, preparing cobbler's thread, and lace-making. Fine flax was used for yarn, while coarser or thicker yarns were made into ropes, basket straps, cordage, and sailcloth.

When spinners had spun seven bobbins on the spinning wheel, it was enough for a bundle weighing about 1 kg. The yarn was wound from the bobbins into a bundle using a winding tool called a *motovilo*. The freshly wound flax bundles were then ready to be washed.

Prepared linen thread. Author: Katarina Šrimpf Vendramin

The spinners placed the flax bundles in wooden tubs or vats filled with cold water to soak for several days. After soaking, they boiled the bundles in a large cauldron with straw on the bottom, sprinkled with sifted beech ash, and boiled them all day. Alternatively, bundles could be soaked in lye by covering them with a cloth, sprinkling with ash, and pouring boiling water over them. The bundles soaked for 12-24 hours. The process was repeated as needed.

They rinsed the bundles in a washing trough or carried them to a stream where they beat the flax against stone washboards or with wooden beaters until all the dirty water ran out. Men assisted in wringing them out. The washed bundles, now grayish-white or off-white, were dried on poles in the sun for several days. To achieve softness and whiteness, the process was often repeated multiple times.

Once the bundles were dry, they were wound on the *motovilo* and formed into small balls of flax yarn, each about 10 cm in diameter. Before World War I, women carried about 50 balls to the weaver, who used them to make warp threads for weaving linen fabrics or fine veils.

Spinners also produced a special thread known as *cvirn*, which involved spinning the finest yarn into a thin thread, twisting it, and joining two or more threads together. This thread could be dyed black using a mixture of resin and

soot from kerosene or charcoal and was used for hemming work clothes, shoe sewing, and laces.

When the spinner made seven spindles, she wound the thread on the bobbin to create a hunk of yarn. A diligent spinner could produce three or four hunks a week. In spring, the hunks were soaked with beech ash for 12 to 24 hours, then washed in a stream and beaten with a stick until the water oozed out. The washed hunks were dried in the sun, wound on a yarn reel, and made into balls of yarn (*kloučke*). From one hunk, four to five balls were made, often wound on walnut shells. These balls were then ready for weaving.

3.2.3. FROM THERAD TO FABRIC

The technique of weaving has significantly evolved over time. In the Middle Ages, vertical warp-weighted looms that utilized warps were gradually replaced by wide horizontal looms. These new looms were easier to handle and enabled the production of wider fabrics, enhancing the efficiency and scope of textile production.

Once woven, the fabric initially appeared grayish, coarse, and stiff, necessitating a process of bleaching and softening before it could be used for various household items. This was typically done by repeated washing or by bleaching the freshly woven fabric at home in the sun during the months of May and June. The process involved placing a five-meter long and one-meter wide bale of cloth in tubs, sprinkling it with sifted beech ash, and dousing it with cold water. After soaking overnight, the cloth was boiled in a cauldron and beaten on a washboard with a wooden beater to soften it. It was then spread out on a mowed meadow, moistened periodically with water on both sides, dried, rolled up, and stored in a chest.

Linen fabric, due to its washability, was particularly suitable for underwear, allowing people to wear fresh and clean clothes against their skin. Its durability and resistance to stains also made it ideal for table linens, towels, and bedding. Women utilized coarser linen to sew sheets, blankets for carrying hay, flour sacks, men's work pants, and aprons. Finer, bleached linen was used for bed linen, towels, aprons, men's shirts and pants, and women's skirts. It wasn't until the late 19th century that purchased fabrics began to replace homemade ones in rural areas.

Weaving was predominantly done by men, usually the master of the house or a trained servant. Preparing the threads was an essential preliminary step, which required a threading box and involved three people in creating the thread and preparing the base for the looms. Children often assisted by winding yarn on tubes, which were then placed on the weaving boat.

Once the cloth was woven, housewives cut the woven cloth, spread it on the grass on sunny days, sprinkled it with water several times a day, and bleached it. The bleached linen was then washed, dried, and stored in chests. Traditionally, linen fabric was a crucial part of a bride's dowry, symbolizing her domestic skills and readiness for marriage. White, neatly woven linen and household textiles (sheets, towels, tablecloths) were a significant part of this dowry.

Historically, flax was vital not only for clothing but also for its seeds and oil, which were used in food and as medicine for both humans and animals. Flaxseed oil was also used for oil lamps, providing light in homes. The communal aspects of flax processing, such as breaking and spinning, offered opportunities for socializing and festivity, while weaving provided additional income for poorer residents.

This detailed process, from sowing to spinning, highlights the intricate and labour-intensive nature of flax production, which has evolved over centuries to produce the high-quality linen textiles we know today.

SOURCES:

Kobe-Arzenšek, K. 1986. Lanarstvo in konopljarstvo na Slovenskem v prejšnjem stoletju do konca dvojne monarhije. In: Prispevki za novejšo zgodovino, 1986 (1-2). Available at: https://sistory.si/publication/2487roots of the European linen patterns. Arti Grafiche Friulane]. str.73–96.

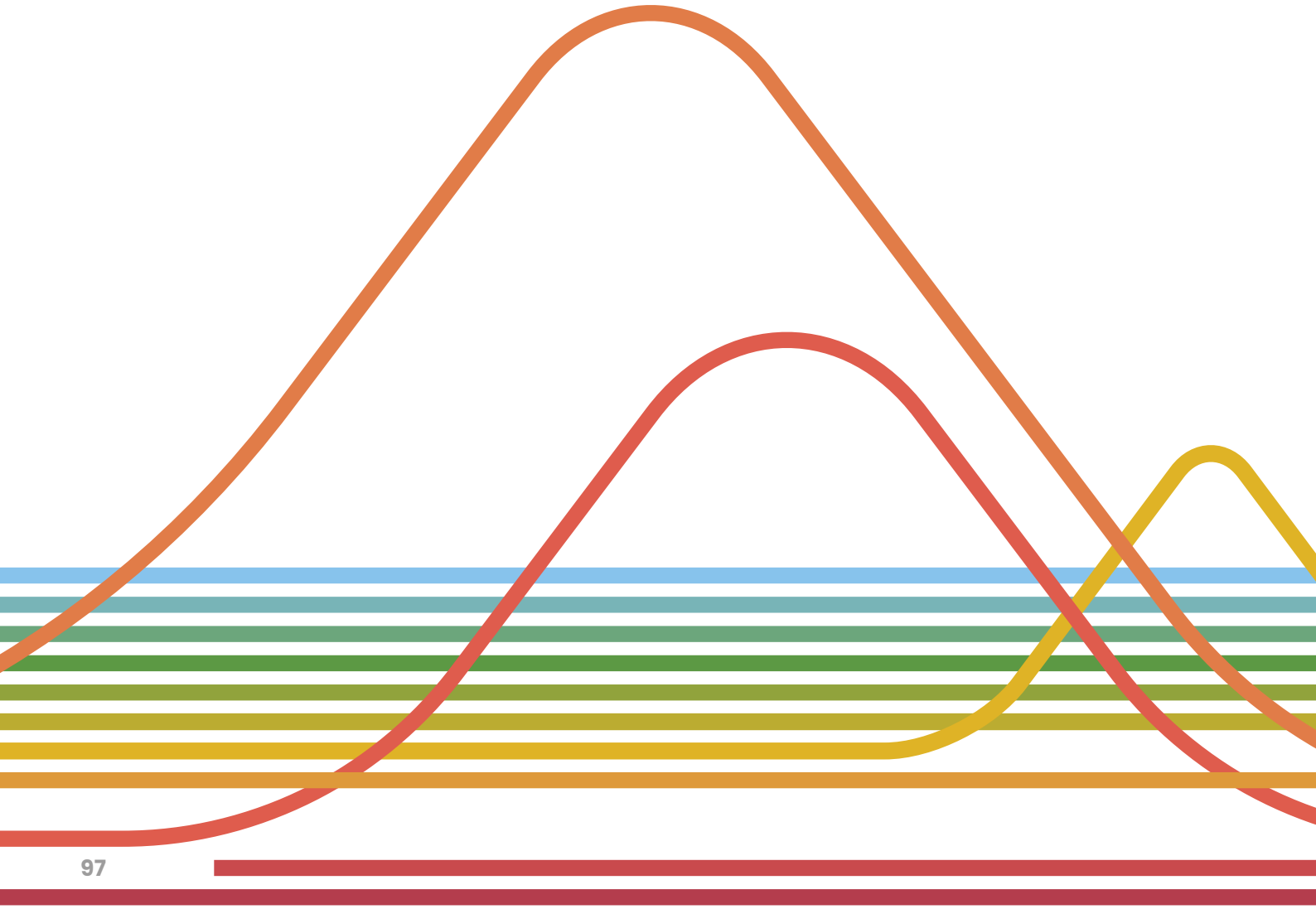
Gestrin, F., 1991. Industrijske rastline (lan, konoplja, murve) na Slovenskem. Kronika, [na spletu] 39(3), pp.39–44. Available at: <http://www.dlib.si/details/URN:NBN:SI:doc-PBN2BI3D>.

Smerdel, I., 1998. Dediščina lanu in in platna na Slovenskem = The Slovene linen-making tradition. Linen on net: the common

Sterle, M., 1980. Platnarstvo na loškem od sredine 18. stoletja do danes. Loški razgledi, 27, pp.131–150.

Žontar, J., 1956. Platnarstvo in sitarstvo v loškem gospostvu v 18. stoletju. Loški razgledi, (3), pp.89–102.

Mohorič, I. 1955. Škofjeloško platnarstvo in njegov zaton. Loški razgledi 2 (1).



THE FLAX CULTIVATION AND LINEN PRODUCTION IN ŠKOFJA LOKA AREA

MARIJA DEMŠAR & KATI SEKIRNIK

HISTORY

Flax cultivation and linen production were certainly widespread in the Škofja Loka area in the 12th century, as evidenced by the land registers in which flax is mentioned as a frequent subject duty. Pictures of the fresco of Holy Sunday, which was made around 1450 and is located in the Church of the Annunciation in Crngrob, serve as a contemporary document demonstrating the local importance of flax cultivation and linen production. The surnames Weber, Veber, Kavčič, and Tkavčič are also references to the region's weaving heritage.

In the 18th century, the Škofja Loka area was a centre of linen production in the Gorenjska region and also played an important role in Europe. The weavers in the town of Škofja Loka formed a weavers' guild in the mid-18th century, and weaving was also widespread in the countryside (Sorško field, Selca valley, Poljane valley, Besnica). Many farmers had their own looms and wove in autumn and winter. There were fierce disagreements between urban and rural weavers over unfair competition, as rural weavers were only supposed to weave for their own use and not for sale – a rule they did not abide by and a reason why the members of the weavers' guild, who had to follow many organisational rules, complained to the authorities. Documents from the 18th century show that there were 21 weavers in the town of Škofja Loka and 374 in the countryside in the middle of the 18th century.

Linen from Škofja Loka was mainly sold to the Italian towns of Trieste and Udine and Croatian town Rijeka. An important export item from the Škofja Loka area was cloth for ships' sails. The merchants in Škofja Loka also bought linen from the region (Polhov Gradec) and supplied the weavers with flax from the Carinthia region in present-day Austria (Klagenfurt, Villach, Völkermarkt).

In the second half of the 19th century, linen from Škofja Loka could no longer compete with imported linen from Bohemia and Moravia, where the technology of linen production and tools had improved. Imported linen was softer, more evenly woven and cheaper than domestic linen. In addition, cotton fabrics became more and more popular and began to replace linen fabrics, resulting in the decline of flax cultivation. There were some initiatives by state institutions such as that of *Kmetijska družba* (Agricultural Association) to support flax cultivation and linen production. They produced some textbooks and lectures and imported linseed from Riga with the intention of improving the quality of flax cultivation, but with little success.

The lack of materials due to the First World War made flax more popular again – flax cultivation was ordered and supported by the authorities. But it declined once more just a few years after the end of the war, with only a few farmers and weavers holding out until the start of the Second

Holy Sunday fresco, from around 1460. Source: Loški Muzej Škofja Loka

World War, when incomes were poor and more and more people began to work in the region's factories. Only a few villages were still weaving after the Second World War, including Besnica (Kranj), Gabrška gora (Poljane Valley), Bukovščica and Davča (Selca Valley).

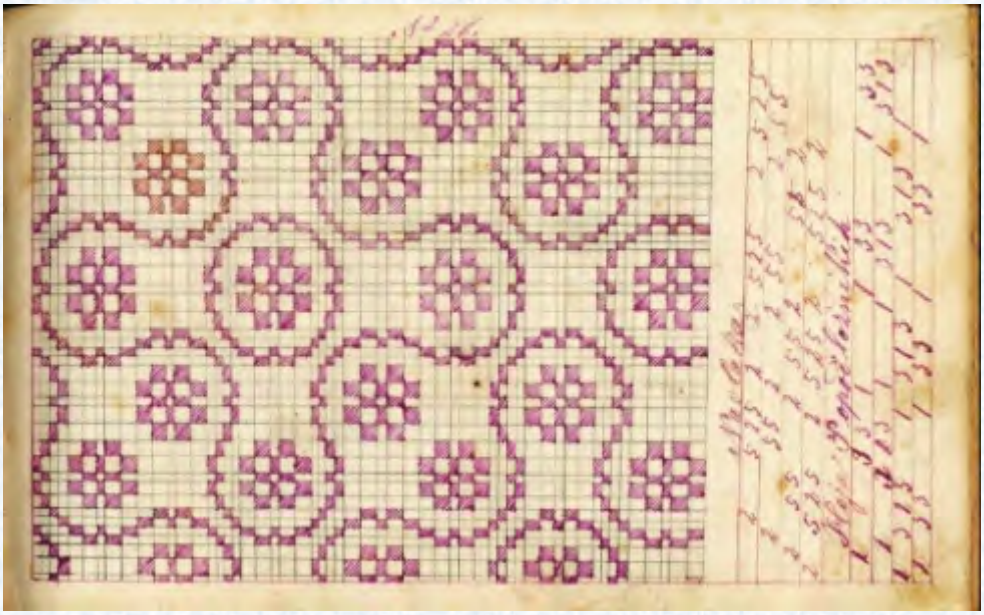
TRADITIONAL FESTIVITIES CONNECTED WITH FALX

In the Škofja Loka area, the breaking of flax was traditionally carried out by women, the so-called *terice*, who travelled from house to house for this task. This event was considered a domestic holiday. Despite the hard labour, the women dressed festively for the occasion. Good food and drinks were served at these gatherings, making the work a social and enjoyable event. It is known from Davča that the women flax crushers often teased young boys and men by tying yarn tails on their backs or rolling the m around in shives. The young men in turn teased the women and often prepared a straw man around which much teasing took place.

Heckling and spinning were typical winter activities for the women, which began after Christmas and lasted until mid-March. After the First World War, spinning almost died out and survived only in the higher-level villages in the Selca and Poljane valleys (Dražgoše, Martinj Vrh, Javorje, Žetina) until the mid-1950s. These spinning gatherings were also social events where the women gathered on the farms and the men joined them, sometimes bringing musicians to sing and dance.

In Davča, certain days were avoided for spinning due to traditional beliefs. For example, spinning was not done on Saint Catherine's Day (15 November), Saint Lucia's Day (13 December), Saint Paul's Day (25 January, as he was the protector of the winds to prevent the wind from blowing the flax from the field during the harvest), Carnival Day, and Saint Jedrt's Day (17 March). It was believed that if a spinner spun on St Jedrt's Day, all her yarn would be eaten by mice.

A page from the weaver's pattern book from 1878 (Mušterske bukve tkalca Jožefa Bernika). Surce: Loški muzej Škofja Loka



These traditions emphasise the cultural importance of flax processing and the communal and festive aspects associated with it.

TODAY

Today, the heritage of flax cultivation and linen production is presented in the Škofja Loka Museum's permanent ethnological exhibition. The Škofja Loka Museum also preserves an

Dan teric and the flax festivities in Davča. Tim Jauh, 2023. Source: Davča Info

important object for the heritage of weaving, namely the only currently known book with weaving patterns in Slovenia –so called *Mušterske bukve* or weaving pattern book of master weaver Jožef Bernik from 1878. In addition to the patterns, there are also written comments by Jožef Bernik, which shows that the book was perhaps intended as a textbook for other weavers.

Knowledge about flax cultivation and linen production is still preserved in the small village of Davča in the Selca Valley by the Davča Tourist Association, which organises the *Dan teric* (Day of flax beating) event every year, where visitors are shown the process of linen production from flax to linen. The event has a long tradition: it was first held in 1969 on the Vrhovc homestead, and its 37th edition took place in 2023. The event combines ethnographic sections, during whichwhere the members of the association present techniques and processes of flax production, and a local festival with music and food.

The association also runs a small local museum where linen production is presented. However, the Davča community no longer produces linen for commercial purposes, but grows flax irregularly and only for the needs of the annual event.

The members of the association are mainly residents of the village of Davča, and in recent years the main activities have been taken over by the younger members. They have a positive tendency to maintain the event and are proud of this tradition. There is a problem with passing on knowledge from the older to the younger generation. As flax cultivation and linen production in the village ceased in the 1960s and from then on was only kept alive for the event, the knowledge was not passed on to the younger generations in the form of actual labour, but only during the preparations for the annual event. As part of the SI-AT Interreg project DUO handicrafts, a film was made about the tradition of linen production in Davča. It documents the entire process from seed to textile.

SOURCES:

Mohorič, I., 1955, Škofjeloško platnarstvo in njegov zaton. In: Loški razgledi, letnik 2, številka 1. Available at: https://www.dlib.si/details/URN:NBN:SI:doc-6WZABFW6

Mušterske bukve tkalca Jožefa Bernika – Book of weaving patterns: https://www.loski-muzej.si/barvarstvo/digitaliziranemusterske-bukve/

Sterle, M., 1980, Platnarstvo na Loškem od sredine 18. stoletja do danes. In: Loški razgledi, letnik 27, številka 1. Available at: https://www.dlib.si/details/URN:NBN:SI:DOC-GOU1XMQ3

Tourist Association Davča, Dan teric event: https://davca.info/dan-teric/

Žagar, Janja, 1999, Mušterske bukve škofjeloškega tkalca. In: Loški razgledi, letnik 46, številka 1. Available at: https://www.dlib.si/details/URN:NBN:SI:DOC-L75W3H42

FLAX CULTIVATION AND PROCESSING IN THE ÖTZTAL

ELISABETH WALCH & MICHAEL KASPER

HISTORY

Flax was already being cultivated in various areas of the Alps in prehistoric times. There is even evidence of flax cultivation as high as at altitude of 1700 metres above sea level. In 1872 AD, the Tyrolean state school inspector Christian Schnüller reported that cultivation was most significant in the district of Lienz, where almost 9,000 people were involved in flax cultivation every year, and in the district of Silz - Ötzthal, where 3,500 people cultivated flax.

In South Tyrol, on the other hand, the focus was on hemp. In Graubünden, it was observed in 1916 that flax thrived particularly well in areas bordering on arable farming.

During the heyday of flax cultivation in Ötztal between 1820 and 1880, between 3,200 and 3,600 centners of flax were harvested annually from Sautens to Längenfeld. In 1866, the German teacher, alpinist and geographer Adolph Schaubach described flax cultivation in Ötztal:

"A main product of the valleys of Längenfeld and Umhausen is flax, which is of rare beauty. Two types are grown, the white, which is coarser, and the grey, which is finer and longer; Umhausen has the best, equal to the Brabanter; it is partly sold raw, partly processed and sold to the markets of Sinigaglia, Livorno and Sicily. Every year, 25,000 cubic metres of linen are exported, in addition to raw flax and linseed."

The cultural boundary of flax cultivation lies in the Ötztal in the valley floor of Huben at 1179 metres above sea level. In the 18th century, the economy of the central Ötztal was strongly characterised by agriculture. The valley floor of Umhausen was particularly intensively farmed. In 1892, 60,000 to 70,000 kg of flax were harvested in the community of Umhausen, in 1908 only 24,000 kg, stopping completely by 1956.

THE WORKFLOW AND WORKING CONDITIONS IN FLAX PROCESSING

The flax plant grows best in temperate climates and needs a lot of moisture. In Ötztal, large quantities of usable water for flax roasting and sunny meadows for bleaching the flax were sufficiently available. The *Vereinigte Volks- und Landwirthschaftskalender für das Burggrafenamt und Vinschgau* (United Folk and Agricultural Calendar for the Burgraviate and Vinschgau) from 1868 also contains a detailed article on flax

Roping the flax in late summer in Piburg 1895. Source: © Ötztaler Museen

cultivation in the Ötztal region. The author describes in detail the two different types of flax processing, the taur roasting in the front Ötztal and the water roasting in the rear Ötztal.

Reference is made to the "beautiful order" of flax pulling as well as the crosswise "setting up" of the bundles. Then the freeing of the seeds from the capsules is described and experiments with Axam, Russian and English Köngislein are reported, which were not very successful. The author sees the following advantages of dew retting: "As a rule, dew retting produces a much softer and finer flax, which is less heavy and therefore lasts longer when spun [...]. With dew retting, no fertiliser is actually lost for the field, because the waste returns to the field as litter when it is crushed [...]."

He writes about the next steps of chopping and turning: "This process is very old-fashioned, simple, but it still works quickly and well. [...]. Foreigners shake their heads at this method and claim that the flax suffers as a result, but once it is cleaned, they still have to praise it."

While the sowing of the flax was only carried out by the men, the weeding was the work of the women and children. The next steps were carried out by the men. After that, the harrow was often driven over the field again to press the seed into the soil, a process known as *Inegetn* (einggen). Finally, the field was rolled with a *Wolgar* (wooden roller). When the flax was ripe, the women and children pulled the flax out of the ground with their bare hands. Spreading the beaten flax on the field, called "landing", was a task shared among them. In the *Grammeln* or *Brecheln* stage, both men and women participated. The men handled the rough preliminary work, known as pre-gramming, while the women completed the gramming process. The work in the *Pluil* and the swing huts was primarily women's work, with usually eight to nine women working, depending on the number of available swing wheels.

The yarn was then taken to the weavers. There used to be many weavers; in some places, such as Niederthei, it was said that every house had a loom, and some houses even had two.

The journey from flax to linen was far from complete when the flax fibres were spun. Before the spun thread could finally be woven into a piece of fabric, there were still several manual operations and steps in between: "After months of labour, the spun thread was twisted into many strands and plaits, which had to be boiled in wood ash and bone liquor for several days to make the thread very fine and soft. After washing and rinsing, the strands could be hung on a batten to dry. The yarn was then wound onto the bobbin and unwound onto large wooden bobbins with the help of the winding wheel and held in this way until it was unwound onto many small, thin 'sinks' before weaving, which were then placed in the 'shuttles' (weaving shuttles)."

FUTURE PERSPECTIVE

From the mid-1950s to the 1990s, flax cultivation was only an alternative form of production in this country. In addition, there were efforts from the cultural scene to revitalise old experiential knowledge and farming production methods. In 1993, the Tauriska cultural association, together with the Hohe Tauern National Park, organised the project "From Flax to Linen". Around the same time (1987-2009), Dr Karl Scheiber tried to revive flax cultivation in and from Umhausen. In 1999, the teacher Arnold Pichler carried out a similar project with the children of the Weißpriach primary school in Lungau. The aspect of sustainability is currently leading to a rethink in textile production and a more conscious use of regional raw materials.

Laying out flax in Piburg 1895. Source: © Ötztaler Museen

SOURCES:

Hofer, A., 2022 Das Ötztal und „sei Hoor" – Eine sozial- und kulturhistorische Spurensuche zum Flachsanbau. In: Hessenberger, E.(ed.), Hoamatle. Heumahd. Heimat. Ötztaler Museumsgeschichte (n) Teil II. Innsbruck: Ötztaler Museen Schriften. 179-206.

FLAX IN THE BIOESFERA OF VAL MÜSTAIR

DIEGO RINALLO & MIRIAM LEITE FARIAS

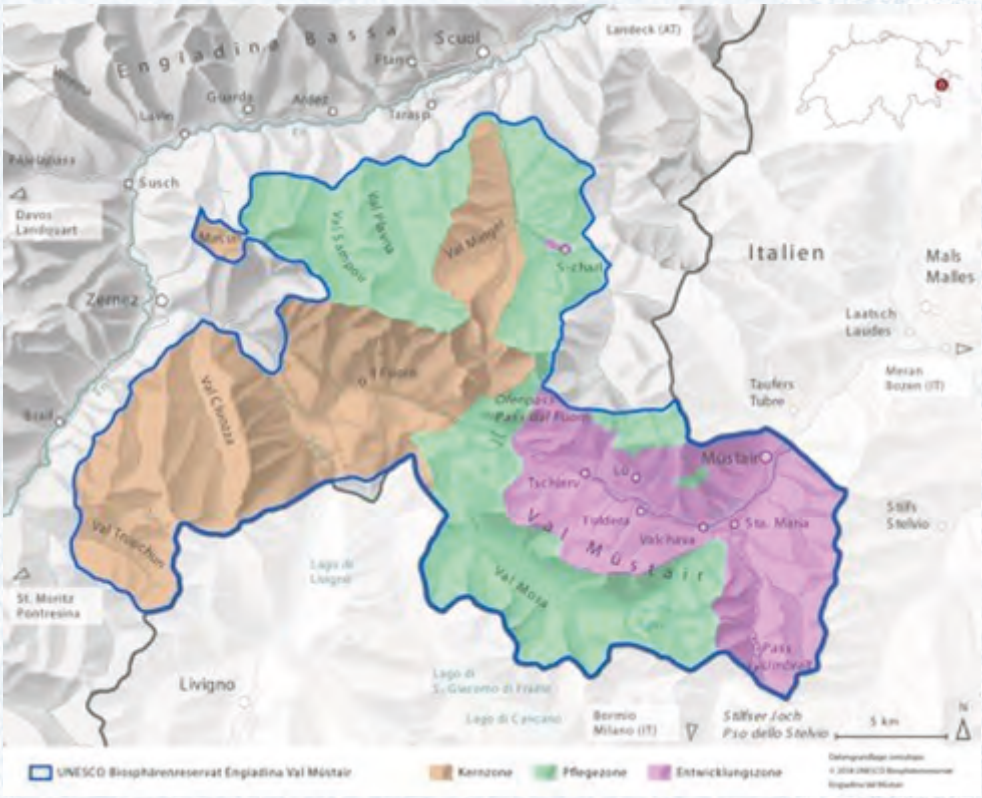
BIOSPHERE VAL MÜSTAIR: A JOURNEY OF SUSTAINABLE COEXISTENCE

The Bioesfera Val Müstair (BVM) is located in the easternmost part of Switzerland, along the River Inn and close to the Italian border. In accordance with the updated UNESCO biosphere qualifications, the Val Müstair Regional Nature Park, together with the municipality of Scuol and the Swiss National Park (SNP), forms the Engiadina Val Müstair Biosphere Reserve. The core philosophy of this reserve is to promote sustainable interactions between man and nature and serve as a model region that demonstrates the value of sustainable management.

The Swiss National Park was initially designated as a biosphere reserve for the first time in 1979. In 1995, however, the Swiss National Park lost its status as a UNESCO biosphere reserve because it did not fulfil UNESCO's updated zoning requirements. In order to regain this status, a new strategy was required. This led to the proposal to establish a maintenance and development zone in Val Müstair.

The concept was to create an area where sustainable human activities and environmental protection could co-exist in line with UNESCO's revised criteria for biosphere reserves. The inclusion of Val Müstair in this new zone was essential to create a model for sustainable development alongside the conservation efforts of the Swiss National Park. This integrated approach was the key to regaining UNESCO biosphere status. As a result, the UNESCO biosphere reserve status was provisionally restored and Val Müstair was recognised as a regional nature park in 2011. This recognition was cemented by the municipality of Scuol's agreement to extend the reserve to the north side, fully defining the boundaries of the UNESCO biosphere reserve as we know it today.

Val Müstair (BVM) Biosphere boundaries



HISTORY OF FLAX IN THE VAL MÜSTAIR

The initiative to revive flax cultivation in Val Müstair goes back to the Biosfera and is part of a programme to promote biodiversity in the valley. Flax, a flowering plant, was chosen because it can diversify the agricultural landscape and provide a habitat for insects, as it flowers later than other plants. Flax cultivation had a long tradition in Val Müstair, but had been interrupted for some time. Tessanda, a local artisan hand-weaving company, recognised the narrative potential of reviving flax cultivation and saw it as a way to reconnect with the region's heritage.

SwissFlax GmbH, a company dedicated to rebuilding the flax value chain in Switzerland, provided technical support for the project. Dominik Füglistaller, Managing Director of SwissFlax, supported such initiatives and emphasised the importance of understanding the effort required to produce textiles from flax. He explained: "We welcome such initiatives. It is important to show once again how much time, diligence and sweat it takes to produce a textile from the field to the finished kitchen towel or jumper. In addition, flax is a wonderful and versatile plant and I look forward to seeing it bloom again in the Münstertal".

Caroline Schadegg, the project manager for the reintroduction of flax, explained that Tessanda was immediately willing to become a partner for the initiative. But the hand weavers faced the challenge of convincing farmers to change their usual ploughing plans. However, a solution emerged when one of Tessanda's weavers offered a small, previously uncultivated piece of land for the initiative. This breakthrough led to other farmers starting to grow flax on behalf of Biosfera in 2022. In this first trial phase, different flax varieties were tested to determine the most suitable varieties for the soil and climate in Val Müstair, and the testing process is still ongoing.

The project has been expanded through the participation of private growers supported by ZiehLein, an association founded in 2020 to promote flax cultivation in Switzerland. ZiehLein encourages participation in traditional processing methods and a sustainable way of life. For a fee of CHF 35, private individuals who wish to join the initiative can order seeds from ZiehLein. The association helps determine the appropriate amount of seed based on the square metres of land available and then sends detailed, step-by-step instructions for cultivation. Participants can officially register as growers after joining. ZiehLein also organises an annual festival to demonstrate linen production from flax. Following a visit by the association to Val Müstair in March 2023, private flax growers from Val Müstair and southern Grisons can now also join ZiehLein and receive direct support from the region via Biosfera.

FLAX IN THE VAL MÜSTAIR TODAY

Tessanda is currently playing a central role in the project of recultivating flax in Val Müstair. The organisation is providing its technical expertise for the project and is responsible for marketing and communication tasks. This commitment is crucial to reviving the tradition of flax cultivation in the valley.

As part of this initiative, Tessanda has designed and produced an 'ambassador product' to symbolise the future of flax cultivation in Val Müstair: the *sac da marenda*, the picnic bag. This 100% linen product from SwissFlax is sold for CHF 118. The bag is decorated with two coloured stripes in yellow, blue or green on the front and can be closed with a colour-coordinated cotton ribbon. The *Sac da Marenda* not only symbolises

Flax harvest in Val Mustair; historical photo, used for promoting the reintroduction on of flax initiative. Source: Val Mustair.

Sac da Marenda. Source: Tessanda

the practical use of linen from the region, but is also a tangible link to flax cultivation in the region.

In addition to these efforts, Biosfera will organise a *Brächete*, a traditional flax festival, to further raise awareness of the tradition of flax cultivation in Val Müstair. In the past, a *Brächete* was held in every village after flax cultivation, turning the processing of flax into a public festival. This tradition, which was discontinued after the Second World War, involved craft demonstrations and the use of old hand tools to show the transformation of flax from plant to finished product. During the event, women dressed in traditional costumes use these tools for various stages of flax processing, including rippling, retting, pre-breaking, breaking, hacking, spinning, spooling, and weaving. Men, often dressed in cowhide or burgundy, demonstrate the use of old tools such as threshing machines, oat graters, and hemp rope mills – as well as traditional crafts such as making shingles, splitting wood, producing cider, and distilling schnapps.

The event, which is included in the official list of living traditions of the Canton of Bern, showcases these various traditional activities and crafts. In October 2023, the *Brächete* will return to Val Müstair for the first time in decades and will take place in the backyard of Tessanda. The equipment for crushing flax from the St. Johann monastery, which was specially restored for this event, played a central role in this revival.

SOURCES:

Chaîne, trame et patience infinie: une vie en toute liberté de choix: https://www.swisslife.ch/fr/particuliers/blog/tessanda.html

New wind for them Tessanda Val Müstair: https://www.gr.ch/DE/institutionen/verwaltung/djsg/ajv/uberuns/dokumentation/Dokumentenliste%20Medienspiegel/2017-06-22%20Jubil%C3%A4ums-Feier%20im%20Gef%C3%A4ngnis%20Sennhof.pdf

Parc da natüra. Biosfera Val Müstair: https://www.graubuenden.ch/en/attractions/parks/biosfera-val-muestair

Simply authentic, Agricultura Val Müstair: https://www.valmuestair.ch/en/naturpark/wirtschaft/agricultura-valmuestair

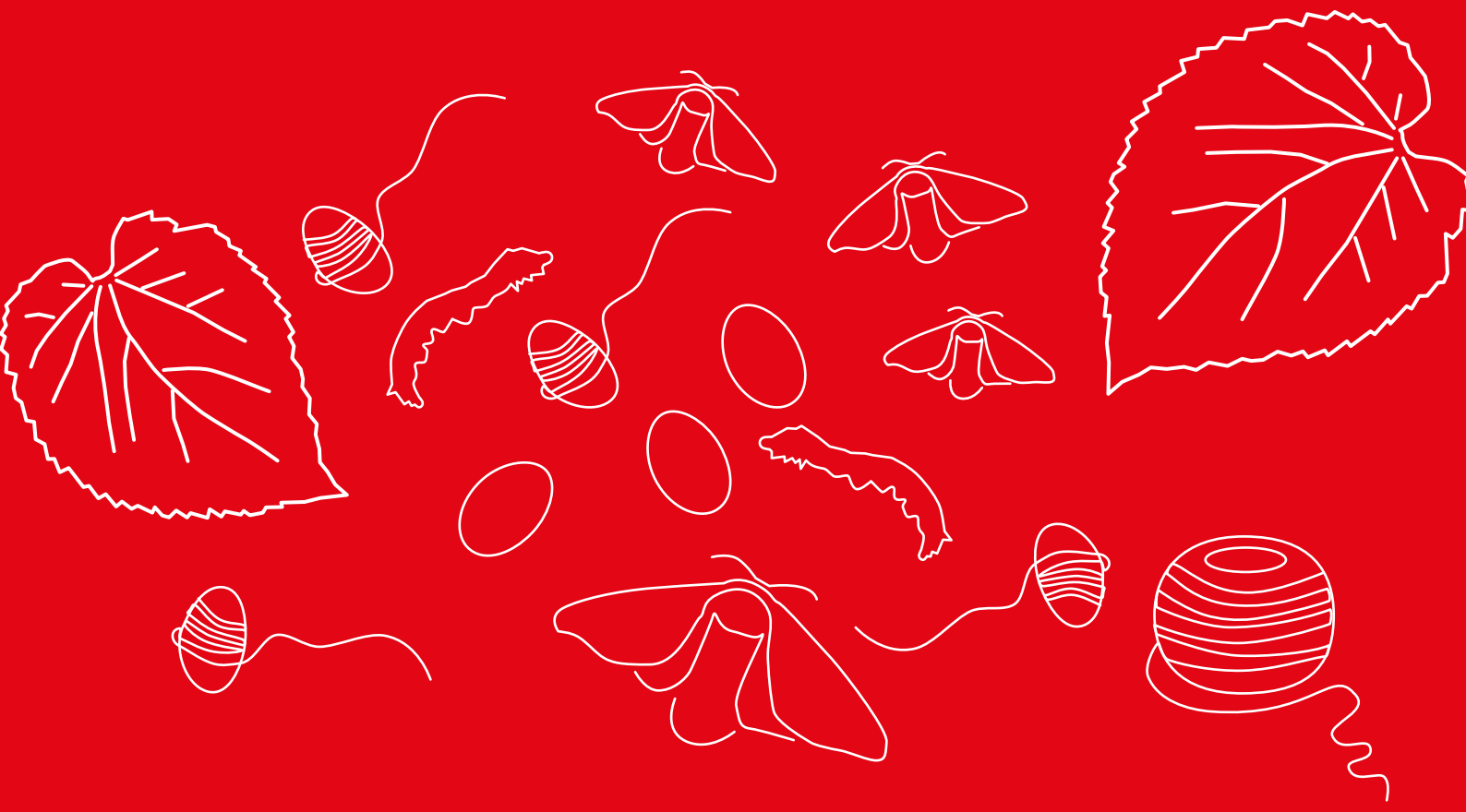
Young women learn ancient crafts: https://reformiert.info/de/recherche/die-handweberei-interessiert-auch-junge-frauenan-nachwuchs-mangelt-es-der-tessanda-deshalb-nicht--20405.html

Tessanda History :https://nossaistorgia.ch/entries/36oVjekZPyd

Val Müstair - Parc Naziunal Biosphere Reserve, Switzerland: https://en.unesco.org/biosphere/eu-na/val-mustair

Video Tessanda IT: https://www.youtube.com/watch?v=93BGcMU0t2Y&t=26s

4. SILK



In terms of sustainability, silk is truly ecological. Its production does not require large amounts of water or toxic chemicals. However, it requires an abundance of living trees for the silkworms to feed on. Silk production is a cyclical process that utilises local resources. The cycle begins and ends with the planting of mulberry seedlings. These saplings produce fruit for dye and food, bark for tea, leaves for organic fertiliser and food for rearing silkworms. The silkworms continue the cycle by producing cocoons and nutrient-rich waste that can be used as fertiliser for mulberries and food crops. Nothing is wasted in this process. The unusable outer layer of the cocoon can be saved for stuffing pillows and blankets. Even the silk water is kept in some places, as women value it as a moisturiser for the skin. The new thread is dyed with natural dyes and then woven by skilled artisans who preserve thousands of years old knowledge.

Silk is one of the oldest and most valuable materials known to mankind, and it also has a special place in the history of the Alpine region.

In this chapter, we examine the history and importance of silk production in the Alpine region, where unique natural conditions and cultural influences have created a rich heritage of silk production. From the first attempts to raise silkworms to the flourishing of trade routes linking the Alpine valleys to the European capitals, silk production was not only an economic factor but also a cultural and social phenomenon.

The main silk roads between 500 BC and 500 AD. Source: Wikipedia.

PETRA KOLENC

4.1. HISTORY OF SILK PRODUCTION

The history of silk production in the Alpine region is a fascinating story of adaptation and innovation. Originally imported from the East via trade routes, silk became a valued commodity in the Alps during the Middle Ages. Monasteries and aristocratic residences played a key role in the cultivation of mulberry trees and the rearing of silkworms. Over time, silk weaving developed into an important craft that contributed to the economic and cultural development of the Alpine region and created links to the major European markets.

The silk industry also further developed its techniques and relocated its activities. Technology, techniques, and products gradually spread across the Mediterranean to the Alps and beyond, leading to the emergence of various production centres that used their own methods and processes. The luxurious products of this industry that have survived bear witness to the exceptional skills that were cultivated in this industry.

Court Ladies Preparing Newly Woven Silk, a Chinese silk painting suc by Emperor Huizong of Song, early 12th century. Source: Wikipedia.

Silk making process in China. Source: Wikipedia

4.1.1. ANTIQUITY

The history of silk production and weaving is clouded in legend and ancient lore, with China widely recognised as its place of origin. According to some records, silk production dates back to the middle of the 3rd millennium BC. However, silk production in China is also linked to a legend, according to which Empress Leizu, also known as Xi Ling Shi, was sitting under a mulberry tree drinking tea when a single silkworm cocoon fell into her cup. The hot water slowly softened the fibres and loosened the soft strands. As Leizu lifted the cocoon from her teacup, it began to unravel. Legend has it that Leizu, who was also a wife of the mythological Yellow Emperor Huangdi, played a crucial role in teaching the Chinese people the art of sericulture (silk production). For this innovative empress, now known as the goddess of the silkworm and silkworm mother, it is even said that she invented the silk reel, a device used to spin the silk fibres from several cocoons into one thread, and the silk loom, a tool used to weave silk.

The legend of Letizu dates back to around 2640 BC, which was also the time when the Chinese discovered the process of unwinding, spinning, and weaving the silk threads that come from the cocoons of silkworms. This discovery quickly became an important aspect of the Chinese rural economy. Archaeological findings indicate that the weaving of damask and other silk fabrics already existed in the Shang Dynasty, the earliest dynasty in traditional Chinese history, which ruled between the 16th and 11th centuries BC. The tombs discovered in Mashan near Jiangling in Hubei province, which were excavated in the 20th century, provided remarkable examples of brocade, gauze, and embroidery with intricate pictorial patterns. The earliest complete garments were also found in these tombs, demonstrating the advanced skills of ancient Chinese weavers and artisans.

Silk weaving developed into a major industry during the Han dynasty (202 BC – 9 AD) and

became one of the most important Chinese exports via the famous Silk Road, which traversed Central Asia and reached as far as Syria and Rome. From around 140 BC onwards, the art of sericulture spread from China to India and beyond, along with the precious commodity of silk. Large quantities of silk products were transported by sea to India via Central Asia and the Sound China by monks, pilgrims and traders. By the 2nd century AD, India had established its own silk industry and exported raw silk and fabrics to Persia.

During the Parthian era (247 BC – 224 AD), Persia became a central hub for the silk trade between East and West. In regions such as Syria, Egypt, Greece, and Rome, the dyeing and weaving of silk developed into a highly valued craft. Although artisans in these areas used some raw silk from East Asia, the majority of their yarn was obtained by unravelling imported silk fabrics. Despite the spread of silk culture beyond Asia, the intricate production techniques remained a closely guarded secret in the eastern countries.

Between 1000 and 1500 AD, silk formed a bridge for the exchange of art between East Asia, the Middle East and the West.

ROME AS ANCIENT IMPORTER OF SILK

The history of silk in Italy is rich and complex, dating back to antiquity. Italy played a decisive role in the spread of sericulture and silk weaving throughout Europe. The introduction of silk to Italy is attributed to the ancient trade route known as the Silk Road, which passed through Central Asia, Iran, and the Eastern Mediterranean, thus connecting China to the Mediterranean world. The Silk Road was used for the exchange and transport of diverse goods, including silk, spices, and precious metals.

At the time of the Roman Empire, silk was highly sought after in the Mediterranean region, and Rome served as an important hub for the silk trade. At that time, silk was only produced in China; however, Romans had no direct access to China and had to obtain silk through intermediaries. Chinese silk was usually traded via intermediaries who transported the silk along the Silk Road and sold it to merchants in the western regions. These traders then sold the silk to other merchants who transported it further west until it reached the Roman Empire.

A Roman fresco from Pompeii showing a Maenad in silk dress, 1st century AD. Source: Wikipedia.

The Romans also received the silk through diplomatic gifts from China. The Roman Empire maintained diplomatic relations with various states in Central Asia and the eastern Mediterranean, which served as intermediaries between Rome and China. Chinese silk was often given as gifts to Roman emperors and high-ranking officials and was highly coveted as a symbol of wealth and status.

The influence of the Roman silk trade also extended to the Alpine region. The Alpine regions became important transit points for trade routes that connected northern Italy with other European regions. The silk fabrics transported along these routes became accessible in the Alpine cities and stimulated local demand and the development of silk production and processing in these regions. The Roman silk trade thus contributed to the development of economic activities and cultural exchange in the Alpine region, which had a long-term impact on the local population.

4.1.2. LATE ANTIQUITY AND EARLY MIDDLE AGES

The spread of silk production from China to the rest of the world is a fascinating story. Originally, silk was produced exclusively in China, making it a highly prized and valuable export. The Chinese closely guarded the secrets of silk production and maintained their monopoly for thousands of years.

Although evidence of sericulture in Europe dates back to ancient Greece, it was revived in Byzantium in the 6th century AD with its reintroduction from China. This was the time when silk and sericulture spread from Persia to Europe due to the efforts of Justinian I, the Byzantine emperor. Around 550 AD, Justinian I attempted to establish local silk production to meet the high demand in the Mediterranean region. Legend has it that he persuaded two Persian monks who had been living in China to smuggle silkworm eggs or larvae back to the Byzantine Empire. The monks hid the silkworms in the hollows of their bamboo canes and successfully brought them to Constantinople (today's Istanbul).

The monks sent by Justinian give the silkworms to the emperor. Source: Wikipedia.

This also made it possible for silk to appear in all areas of Byzantium - in the coastal areas of the Mediterranean, from southern Greece and Italy, to the central parts such as Venice. However, many sources indicate that the white mulberry has been present alongside the black one in the Balkans since the 6th century, which coincides exactly with the earliest arrival of silk production in Europe.

This successful act of industrial espionage marked the beginning of sericulture in the Byzantine Empire. The hardy silkworms that the monks brought with them formed the basis for European silk production, which flourished until the 19th century. This important event not only broke the Chinese silk monopoly, but also had a lasting impact on the economy and prosperity of the Byzantine Empire and later on some cities in the Alpine region.

4.1.3. SILK TRADING IN THE ALPS

In the early Middle Ages, the silk trade in the Alpine region was an emergent but significant economic activity. The strategic location of the Alpine trade routes facilitated the transport of silk from the production centres to the major markets in Italy and beyond. Monasteries and noble residences involved in silk production played a crucial role in this trade. Silk was often exchanged for other goods and commodities, integrating the Alpine region into wider European trade networks.

This period also saw the rise of Venice as an importer of Levantine goods. The city's rise began in 715, when it signed a trade treaty with the Lombard king Liutprand. These treaties gave Venice the freedom to trade in the cities of the empire and to pay only the authorised customs duties. Over time, Venetian merchants became increasingly powerful and desirable importers of luxury goods, including textiles such as Lavantine silk, rich vestments, Tyrian purple and leather from Antioch for the nobility and high clergy beyond the Alps. The fairs of Ferrara and Pavia in the Lombardy plain served as stopovers for the sale of these goods, and merchants from beyond the Alps also came to make their purchases.

KESI - CUT SILK

The most important luxury product imported to Europe as early as the 11th century was *kesi*. The term kesi, which means "cut silk" in Chinese, refers to a unique textile technique in which the weft threads are cut into short lengths and carefully worked into the fabric. This means that only

Silk production in Northern Italy from 13th to 17th centuries. Source: Wikipedia.

the weft threads are visible, resulting in a clear and precise aesthetic. Unlike continuous weft brocade, where multiple colours can be woven from a single bobbin, kesi uses separate bobbins for each colour area, adding to the complexity of the fabric. Originally used to protect scrolls and support paintings, kesi evolved into a celebrated art form coveted by emperors and scholars, reflecting cultural exchange on the Silk Road.

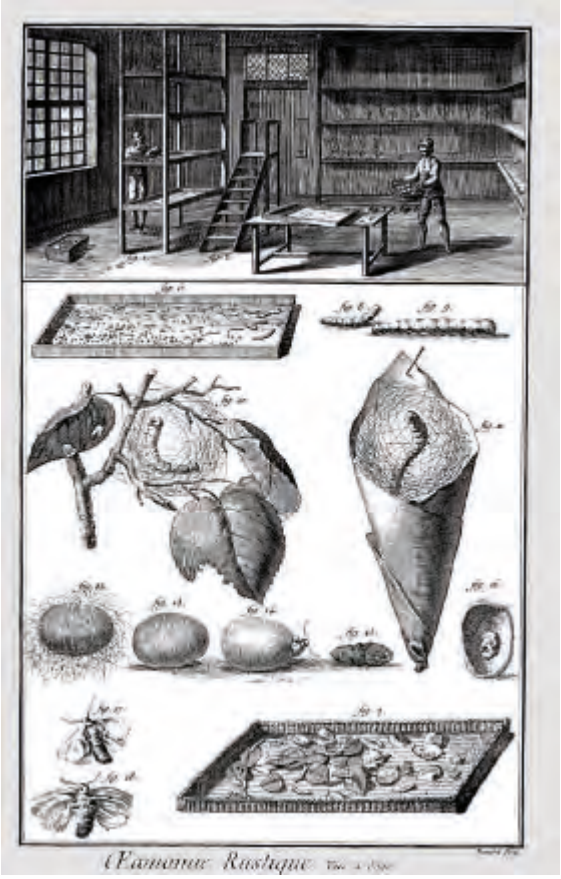
Kesi had multifaceted applications, such as adorning robes, silk panels, and scroll covers, and it served as a medium for transferring paintings into tapestries. The refinement and spread of kesi by the Song dynasty greatly influenced Chinese textile art and spread its appeal throughout East Asia. Panels of kesi were exported to Europe, where they were worked into cathedral vestments. The influence of kesi on European art and textiles can be seen in the fact that European artisans began to adopt similar intricate patterns and detailed weaving techniques in their own work. Although the exact techniques of kesi were not fully imitated, the aesthetics and quality of Chinese silk inspired European textile production.

Although kesi itself was not produced in Europe, its presence and influence were felt through the trade, collecting and inspiration it provided to European textile art.

Handmaking of Kesi – cut silk. Source: Wikipedia.

4.2. MIDDLE AGES

In the Middle Ages (800 AD – 1500 AD), silk production was an emerging industry in the Alpine region, especially from the 12th century onwards. Monasteries and noble residences played a central role by cultivating mulberry trees and rearing silkworms despite the difficult climate. This nascent sericulture was part of a wider trading network connecting Alpine producers with the major markets in Italy and beyond. The high demand for silk at European courts and in urban centres fuelled the growth of this industry and integrated the Alpine economy into the wider European economic landscape.



Picture from the *Encyclopédie* of Diderot and d'Alembert, showing the different steps in sericulture and the manufacture of silk. Source: Wikipedia.

During this period, Italian cities played an important role in the spread of sericulture, as silk production slowly spread across the Apennine Peninsula. The production and processing of silk on the Apennine Peninsula, the individual phases of the production process – from the breeding of silkworms to the processing of clothing – became prevalent in several regions of Italy up to the 11th century. In the 13th century, Venice was one of the leading cities in the silk trade alongside Lucca, Milan and Bologna, which impacted the cities of northern and central Italy and influenced the Alpine region.

In the 15th century, silk cultivation also began in southern France, where centres of silk weaving emerged in cities such as Lyon, Tours and Avignon. These cities became famous for their skilful craftsmen and the production of high-quality silk fabrics, which often catered to the tastes of the French aristocracy and European elites. For a long time, silk fabric was worth its weight in gold and only the rich could afford to buy it. Silk was used for church vestments, wall hangings and furnishings and was in great demand among the upper echelons of the clergy and lay society.

Silk production also then expanded outside of established sites of production. One such example is the Como area in Italy which during the 15th century quickly flourished as the supplier for the silk industry in the Milan Dukedom. At the same time, mulberries were also planted in South Tyrol and Friuli Venezia Giulia, where silk cocoons and raw silk were sold at the St. Lawrence Fair in Udine. At the end of the Middle Ages, the production of silk slowly spread to the hinterland with the aim of obtaining larger quantities of raw materials for production in the famous silk towns.

The Alpine region played a crucial role in this industry and served as an important transit route for the trade in silk and other luxury goods between Italy and France. The difficult terrain of the Alpine region facilitated the movement of merchants and their valuable goods and connected the flourishing silk production centres in France and Italy. This connection not only encouraged economic growth, but also the exchange of technological advances and artistic influences, further enhancing the quality and reputation of French silk. However, even after Europeans learned to breed silkworms, most silk continued to be imported from China.

EARLY FABRIC PRODUCTION IN VENICE AND THE FORMATION OF GUILDS

In the 12th century, Venice transitioned from merely importing luxury fabrics from the Middle East to producing them to a limited extent. This change was significantly influenced by the travels of Marco Polo (1254–1324), who brought unique textiles and decorative motifs from the East to Venice. He imported various goods, including silk fabrics, via the Silk Road and opened up trade with the Mongol Empire until its collapse.

Aspect of daily life depicted in 14th-century illuminated manuscripts from Italy. Source Wikipedia.

The first fabrics produced in Venice were known as *samites*. This heavy silk fabric was velvety to the touch and had a satin-like, shiny surface. The technique originated in the Middle East, Iran, and Syria. It spread throughout the Mediterranean region via Byzantium and Arab domination. Samite, which was considered the most precious silk fabric of the Middle Ages, adorned vestments and sumptuous dresses, which were a privilege of the upper classes of Venetian society. Samite, often richly decorated with gold and silver threads, was initially made exclusively from silk. Later, regulations permitted the use of other fibers, such as linen or hemp, for the warp to increase the strength of the fabric. In 1265, the first guild, the "Arte dei Samiteri" (guild of samite weavers), was founded. This guild also produced brocades, damasks, and satins.

Around 1317, around 30 merchant families and 300 craftsmen, including spinners, weavers and dyers, emigrated from Lucca – then an established Italian centre for the silk trade – to Venice due to political unrest. They settled in the neighbourhoods of Cannaregio and Rialto. Their expertise was the catalyst for the silk industry in Venice. They also brought the production of velvet to Venice. By 1347, Venice had gained exclusive control over its production, which led to the founding of the "Veluderi," the velvet weavers' guild. However, with increasing competition both internationally and within the city, the Venetian government began to regulate textile guilds. By 1366, the three most important guilds were merged in order to rationalise and control the industry.

Around 1500, the introduction of advanced technologies such as the spinning wheel and early mechanical looms began to increase production efficiency. The development of hydraulic technology, particularly in Bologna, revolutionised silk spinning and weaving. By this time, the silk industry in regions such as Veneto and Emilia-Romagna had fully embraced mechanisation. Improved distribution networks, favoured by Venice's strategic location and its supremacy at sea, enabled the efficient export of silk goods, further increasing economic prosperity.

TYROL SILK

The discovery of silk textiles in Tyrolean castles spanning from the 14th to 16th centuries reflects a significant change in cultural and economic values during the Middle Ages and the early modern period in the Alpine region. Originally, silk was a luxury good imported from major silk production centres such as Venice and Florence. However, the presence of silk textiles in Tyrol indicates a growing demand for luxury goods and a changing perception of wealth and status among the Tyrolean elite.

As Tyrolean cloth merchants traded in silk from Italy, the availability and consumption of silk textiles became more widespread in the region. This increasing access to silk not only reflected changing tastes and preferences, but also symbolised social status and prestige. The introduction of silk garments and banners in Tyrolean castles signalled the desire for opulence and sophistication and marked the transition to a more sophisticated and cosmopolitan society in the Alpine region.

Fragments of silk bannar painted in black and gold (mediaeval imperia Eagel) found in Tyrol castle.

The establishment of silk production in Tyrol in 1479 with the rearing of silkworms in the Poor Clares monastery in Brixen also illustrates a shift in economic priorities and local industry in the wider Alpine context. The cultivation of silk in Tyrol symbolised the desire for self-sufficiency and economic independence as well as the recognition of the value and profitability of silk production in the Alpine region.

Overall, the presence of silk textiles in Tyrolean castles and the development of local silk production illustrate the evolving values and aspirations of Tyrolean society during the Middle Ages and early modern period in the context of the Alpine

region as it appropriated luxury goods and sought to establish itself in the European economy.

4.3. EARLY MODERN PERIOD

The history of silk production in Europe in the early modern period (1500–1800) is a story of prosperity and adversity, characterised by technological innovations, scientific discoveries, and changing market dynamics. During the Renaissance, particularly in cities such as Venice, Italy experienced remarkable advances in silk production. By 1510, Venice had established itself as a major centre known for quality and intricate designs. Italian silk textiles became renowned for their craftsmanship and vibrant colours. Their strictly controlled production processes ensured quality and the safeguarding of trade secrets from the early 14th to the early 17th century.

In the late 15th century, France began to develop into a major silk producer. By royal decree of 23 November 1466, Louis XI granted Lyon privileges for silk production and introduced low import duty, making the city the only import port in the kingdom. Towards the end of the 15th century, the Lyon fairs became crucial for the silk industry. Italian merchants were prominently represented at these fairs and traded in silk fabrics such as red satin from Milan, black satin and damask from Lucca, taffeta from Florence, and velvet from Genoa. The trade in these luxurious silk fabrics, which were highly sought after by royalty, was strictly controlled.

During the 15th and 16th centuries, Europe experienced a significant expansion of sericulture, which led to an industrial-scale silk industry. This period also saw the development of crafts and manufacturing industries in other parts of Europe, such as Germany and the United Kingdom. The 17th and 18th centuries saw the emergence of proto-industrial practises aimed at capturing foreign markets, which led to significant changes in the global textile industry.

During the 16th and 17th centuries, the silk industry in Italy and France continued to expand and innovate, with the establishment of silk spinning and weaving mills in various towns in the Alpine region.

In the 16th century, France managed to surpass China in silk production, and Lyon became a leading centre of silk weaving, renowned for its intricate brocades, velvets and satins. Royal patronage, technological advances, and a well-developed trade network drove France's silk industry to its peak in the 17th and 18th centuries. This period of growth and technological development helped to consolidate Europe's supremacy in the global silk trade.

THE OTHER SIDE OF THE COIN OF SILK PRODUCTION

During the Renaissance, the Italian Peninsula city-states, including the regions in the Alps, were the most important producers of luxury silk. They dominated the production of luxury textiles well into the 17th century. However, the silk industry, one of the youngest industries in early modern Europe, developed on a factory-like scale and under factory-like conditions. It was the most gendered industry, with high female participation and low wages, in which merchants organised the work but not the production of the goods.

The first steps of silk production required considerable space, light, and time – as well as a large labour force, mostly girls and women, many of whom worked in charitable and religious institutions. Despite this considerable investment, silk generated far lower income per pound than wool.

Needing labourers who were satisfied with a low wage, silk merchants and guilds in Italian cities and across much of Europe often organised and managed large charitable enclosures for foundlings, abandoned children, poor widows, and abused women. These enclosures provided a cheap labor force. One of the first and most influential systems of poor

relief in southern Europe was the Aumône-Générale of Lyon (1530–1534), which became a model for other cities. It also showed the close relationship between the silk industry and the labour pool provided by poor relief, as it provided work and education for the poor. Foundling homes and conservatories, where many adolescent girls and young women in forced enclosures developed a skilled and disciplined labour force for the growing silk industry.

The particular profitability of the silk industry meant that this industry was based on the labour of women and children. Throughout Europe, many more women than men were employed in the silk industry. Thousands of women worked in cities such as Florence, Venice, and Bologna, often making up at least a quarter of the population working in the industry at some point in the year. This gender imbalance contrasted sharply with the woollen industry, a male-dominated sector.

The best-paid workers in the silk industry were male weavers who earned high artisan wages, while the lowest-paid were the girls who spun the thread and the boys who operated the looms as apprentices. In a "silk town," thousands of poorly paid part-time workers lived alongside a few wealthy artisans and a handful of immensely rich merchants who ran a small luxury economy.

Silk production did not spread wealth around the city as it did with wool, but a few people became very rich. These wealthy individuals built palaces in the city and villas in the countryside and set up production rooms in the attics. The economy of the silk industry fuelled their extravagant consumption, while large parts of the urban population lived in poverty. Labour in the silk industry was intensive and seasonal, requiring thousands of people to be available for short periods in the spring and summer for very little money.

4.4. THE LONG NINETEENTH CENTURY

During the long 19th century (1789–1914), silk production in the Alpine region underwent significant industrialisation and expansion. Important production centres were Lombardy, Piedmont, and Lyon, where the cultivation of mulberry trees and silkworm rearing flourished. This era was characterised by the introduction of mechanised silk spinning mills and advanced weaving techniques.

Numerous silk factories were founded in the region and production techniques were modernised. Production during this period was characterised by the integration of traditional practises with industrial advances, resulting in greater efficiency and production. However, the industry faced challenges such as competition from cheaper Asian silk and silkworm disease.

Industrialisation and international turmoil at the end of the 18th and 19th centuries led to the decline of the European silk industry. Driven by the opening of the Suez Canal, cheaper Japanese silk became popular, which also led to the slow decline of the silk industry in the Alpine region.

Another major challenge during this period was the silkworm disease pebrine, which appeared in France around 1840 and spread first to Spain and Italy, gradually making its way to the rest of Europe, Turkey, the Middle East, Persia, India, China, and Japan. The damage caused by pebrine was severe in every country and led to the collapse of European sericulture. France, for example, went from an annual production of 20,000 tonnes of cocoons in 1853 to 4,000 tonnes in 1865. The decline of the silk industry also began in the Friuli region, especially in Gorizia, in the second half of the 19th century, and the silkworm disease ended all attempts to save silkworm breeding in the Gorizia-Gradisca region.

Due to the sharp decline in European and especially Alpine silk production, the proportion of Asian silk rose to around 40% after the outbreak of pebrine in Europe, and in the 19th century, Japan had become the world's leading exporter of silk.

A Jacquard loom. Source: Wikipedia.

Despite challenges such as the silkworm plague of 1854, which threatened the European silk industry, the pioneering scientific work of individuals such as Louis Pasteur played a crucial role in the revival and modernisation of silk production and ensured that it continued to be important on the world market.

JACQUARD LOOM: THE WORLD'S FIRST 'COMPUTER'

The Jacquard loom, invented by Joseph Marie Jacquard in 1804, revolutionised textile weaving. He combined mechanical elements from other inventors and advanced their operation through innovation by developing a machine for the production of sophisticated patterns.

This mechanical loom simplified the production of complex patterns by using punched cards to control the weaving of individual warp threads. Each card corresponded to a row of the pattern so intricate patterns could be woven efficiently and accurately. The key feature of the Jacquard loom is its ability to weave complex, multi-coloured patterns automatically, significantly reducing manual labour and increasing production speed and versatility in textile manufacturing.

The Jacquard head uses interchangeable punch cards to control a sequence of operations. It is considered an important step in the history of computer hardware. The ability to change the loom's weaving pattern by simply changing the cards was an important conceptual precursor to the development of computer programming and data entry.

ZURICH SILK PRODUCTION

Silk production was not only strong in Italy and France; the city of Zurich also flourished in the 12th and 13th centuries, when the silk trade was introduced from Italy. The textile industry, and the silk industry in particular, was of decisive importance for the development of the canton of Zurich. The industry, which had already been founded in the 14th century, experienced a boom in the 17th century, and in the 19th century silk factories were established in rural areas, particularly on the left bank of Lake Zurich. The Zurich textile industry diversified during this period, with silk production complementing other textile sectors such as cotton, wool and linen. In addition to the silk weaving mills and factories, there were also factories producing other fabrics.

Over the course of the 19th century, the Zurich silk industry developed into one of the most successful branches of the Swiss economy and the most important manufacturing industry in the Canton of Zurich. The raw silk for production was imported, initially from other parts of Europe, and also from East Asia after 1866, especially Japan. While Swiss trading houses facilitated Japan's integration into the world economy, tens of thousands of people were employed in the processing of silk

around Lake Zurich. In the 1850s and 1860s, Zurich grew to become the second- largest silk producer in the world and was known throughout the world for black taffeta and bolting cloths for sieving flour.

Trade representatives from New York to St. Petersburg brought luxurious Swiss silk to customers all over the world. From the 1870s onwards, the Zurich silk manufacturers began to establish subsidiaries in Europe and the USA to circumvent customs barriers and be closer to customers and markets.

With an annual production of over 50 million meters of silk by 1900, Zurich, together with Como and Lyon, was one of the leading centres of the European silk industry. A locally rooted and globally networked industrial cluster emerged in and around Zurich, including raw material exchanges, educational institutions, and large manufacturing enterprises. While the Zurich silk industry continued to be very profitable during the First World War and some companies grew into large international corporations, the Great Depression of the 1930s brought heavy losses.

4.5. FROM THE TWENTIETH CENTURY ONWARDS

In the 20th century, silk production in the Alpine region underwent significant modernisation and faced various challenges. The industry introduced advanced technologies and mechanisation, thereby improving efficiency. However, it faced competition from synthetic fibres and cheaper silk imports from Asia, which led to a decline in traditional silk production.

The main production centres in the Auvergne-Rhône region, Lombardy, Piedmont and Switzerland continued to flourish into the 20th century. Lyon retained the status of the silk capital of the world, as the city's silk fairs attracted buyers and artisans from all over the world and showcased the latest trends in silk weaving and design.

The emergence of synthetic fibres such as nylon in the middle of the 20th century posed a major challenge to the silk industry in the Alpine region, and led to a decline in demand for silk, particularly in industries such as hosiery and clothing. This shift towards synthetic materials dealt a severe blow to the silk industry and led to a decline in production and the closure of many silk workshops and factories.

Nevertheless, silk has endured as a symbol of luxury and elegance, retaining its appeal in niche markets. Today, countries such as China, Japan, South Korea, and Thailand dominate the silk industry and continue to cultivate silk, preserving a millennia-old tradition and enriching the global textile landscape with their creations.

Despite these challenges, the silk produced in the Alpine region remains a symbol of luxury and sophistication in the world of silk. The heritage of silk is celebrated through museums, festivals, and cultural events, while a handful of artisanal silk manufacturers continue to preserve traditional techniques and craftsmanship. Despite these challenges, the region has maintained a reputation for producing high-quality silk, supported by a skilled labour force and innovative textile technologies. Several factories in the region still produce luxurious silk fabrics today, but the raw material for their production is largely imported from Asia. The promotion of new technologies in environmentally friendly silk production and investment in traditional workshops are the strategies that are currently enabling Europe to regain a prominent position in the global silk market.

SILK PRODUCTION AS CULTURAL HERITAGE

Silk has a rich cultural heritage that is now recognised and appreciated all over the world. Various museums, exhibitions and cultural institutions represent its production and use. In Italy, especially in cities such as

Goriza, Como, Florence, and Lyon, there are museums and exhibitions dedicated to the art and history of the silk industry, showing the influence of silk on the local economy and culture.

In addition to museums, silk is included on the UNESCO Intangible Cultural Heritage List (ICH). For example, silk farming and silk crafts in China were inscribed on the UNESCO Intangible Cultural Heritage List in 2009 and silk farming and the traditional production of silk for weaving in the countries of the Middle East in 2022. In addition, the UNESCO World Heritage includes La Lonja de la Seda (Silk Exchange) in Valencia, Spain, a complex of buildings built between 1482 and 1522, which was originally used for the silk trade. This site illustrates the power and wealth of a great Mediterranean trading city in the 15th and 16th centuries and thus also the importance of silk production and the economy.

In Europe, craft techniques related to silk are also included on national lists of intangible cultural heritage, such as that of Switzerland – thus ensuring that these techniques are preserved and promoted. Silk heritage is also portrayed in various cultural events, festivals, and workshops such as Maison de Cantus in Lyon, which preserves and disseminates knowledge about this precious fabric. Both museum collections and living traditions of making and using silk share the goal of preserving the rich history and cultural value of silk for future generations.

SOURCES AND LITERATURE:

Adamič, F. 1984. Mayer, Evgen, pl. (1889–1970). In: *Primorski slovenski biografski leksikon*: 10. snopič Martelanc - Omersa, 2. knjiga. Gorica, Goriška Mohorjeva družba.

Alberti, F. G. 2006. The decline of the industrial district of Como: Recession, relocation or reconversion?*Entrepreneurship and Regional Development*, 18,6.

Avellino, L. 2023. "They have no property to lose": The impasse of free labour in Lombard silk manufacturers (1760-1810).*International Review of Social History*, 68, 135-155.

Braudel, F. 1989. Igre menjave: materialna civilizacija, ekonomija in kapitalizem, XV.-XVIII. Stoletje. Ljubljana: ŠKUC : Znanstveni inštitut Filozofske fakultete.

Braudel, F. 1988. Strukture vsakdanjega življenja: mogoče in nemogoče: Materialna civilizacija, ekonomija in kapitalizem, XV. - XVIII. stoletje. Ljubljana : Založba ŠKUC : Znanstveni inštitut Filozofske fakultete.

Bocconcelli, R., Grandinetti, R. and Tunisini, A. 2015. "Made in Italy": The Italian Contribution to the Development of Business Marketing Discipline and Practices.*Journal of Business-to-Business Marketing*, 22, 3, 161-196.

Brivio, S. 2023. Seta made in Como? Per ora è un sogno ma i progetti ci sono. La Provincia Available at: https://www.laprovinciadicomo.it/stories/Economia/seta-made-como-per-ora-e-sogno-ma-progetti-ci-sono-o_1608038_11/

Casati, G. 2023. Archivi per l'impresa, archivi per la storia: esplorarion nel fondo delle filande e tessiture Costa dell'Archivio di Stato di Como.*Economia Aziendale Online*, 14, 4.

Crivelli, G. 2019. Como rilancia il primato mondiale nella seta.*Il Sole 24 Ore*(Nov., 22) Available at: https://www.ilsole24ore.com/art/como-rilancia-primato-mondiale-seta-ACFKeRz

Crivelli, G. 2021. Così Mantero dà nuova vita alla seta inutilizzata con il progetto Resilk.*Il Sole 24 Ore*(July, 23). Available at: https://www.ilsole24ore.com/art/grazie-progetto-resilk-mantero-da-forma-e-seconda-vita-seta-AE4UnRX

Dijkma, Jessica. 2011. The fabric of society: The organisation of textile manufacturing in the Middle East and Europe, c. 700 – c. 1500. Available at: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=XVcS2DMAAAAJ&citation_for_view=XVcS2DMAAAAJ:MXK_kJrjxJIC

Enciklopedija Slovenije. 1987. Del 12. Svilarstvo. Ljubljana: Mladinska knjiga, pp.405-406.

Enciklopedija Slovenije. 1987. Del 12. Svilogojstvo. Ljubljana: Mladinska knjiga, pp.405-406.

Ertl, Thomas. 2006. Silkworms, Capital and Merchant Ships European Sik Industry in the Medieval World Economy. In: The Medieval History Journal, 9, 2.

F.A.R. Fondazione Antonio Ratti (n.a.). *Antonio's Dream. A Journey through Art and Textile*.

In Lombardia (n.a.). Como, le Vie della Seta. Available at: https://www.in-lombardia.it/it/visitare-la-lombardia/shopping-e-esperienze-lombardia/como-le-vie-della-seta

Federico, G. 1994. Il filo d'oro, l'industria della seta dalla Restaurazione alla grande crisi, edizioni Marsilio, Padova.

Federico, G. 2009. An economic history of the silk industry, 1830-1930, Cambridge Studies in Modern Economic History , Cambridge University press, digitally printed version.

Il filo lucente: la produzione della seta e il mercato della moda a Gorizia 1725-1915: catalogo. 1993. Gorizia: Edizioni della Laguna

FIli di vita. 1996. Percorsi di lavoro femminile nel Goriziano tra Sette e Novecento. Gorizia: Edizioni della laguna.

Heller, S. G. (eds.). 2018. A Cultural History of Dress and Fashion in the Medieval Age. London : Bloomsbury Academic.

History of Zurich. Available at: https://en.wikipedia.org/wiki/History_of_Z%C3%BCrich

Holz, Eva, Carnelutti, Jan: Svilogojstvo. In: *Enciklopedija Slovenije*, 406-407.

Hoffmann, J. Wesley 1923. The Commerce of the German Alpine Passes During the Early Middle Ages. In: Journal of Political Economy 31 (6).

Jenkins, D. (eds.). 2003. The Cambridge History of Western Textiles, Volume 1. Cambridge, U.K.; New York : Cambridge University Press.

Jenkins, D. (eds.). 2003. The Cambridge History of Western Textiles, Volume 1. Cambridge, U.K.; New York : Cambridge University Press.

Ipavec, V. M.. 2006. Murve in kavalirji. Svologojstvo na Goriškem. Nova Gorica. Ljubljana: ZRC SAZU.

Kaczmarek, Z. 2017. Textile production and consumption in Roman provinces and in free Germania – a 21st century perspective. In: Studia Europaea Gnesnensia 16(16). Available at: https://pressto.amu.edu.pl/index.php/seg/article/view/30079

Kelley, Anna C. 2023. Searching for Professional Women in the Mid to Late Roman Textile Industry, In: Past & Present, Volume 258 (1). pps. 3–43, Available at: https://doi.org/10.1093/pastj/gtac007

Mantero. 2024.*Chi Siamo*. Available at: https://www.mantero.com/pages/chi-siamo#:~:text=Tutto%20inizia%20nel%201895%20con,nel%20comparto%20serico%20in%20zona

Moia, I. 2020.*Bachicoltura Rivoluzionaria*. Available at: https://www.bachicoltura-tessitura-agricoltura.com

Museo della Seta Como. 2024.*The Bitter Life*. Available at: https://museosetacomo.com/seta-articolo.php?post_id=248&lang_id=2

Museo della Seta Como. 2024. *Como, Sustainable City of Silk*. Available at: https://museosetacomo.com/seta-articolo.php?post_id=246&lang_id=2

Museo della Seta Como. 2024.*Once Upon a Time There Was Silk*. Available at: https://museosetacomo.com/seta-articolo.php?lang_id=2&ev_id=0&post_id=227&vid_id=0&pag_id=0

Ota, Y. 2013. L'industria tessile. In*Il contributo italiano alla storia del pensiero - Tecnica*. Roma: Treccani.

Parco Lura. s.a.*Il Comasco, dai Bachi da Seta ai Tessuti Pregiati*. available at: https://www.parcolura.it/pagina.php?id=80

Rosina, M. and Chiara, F. 2008.*Guido Ravasi: Il Signore della Seta*. Como: Nodo libri.

Rozzi, A., Malpei, F., Bonomo, L., Bianchi, R. 1999. Textile wastewater reuse in Northern Italy (Como). Water Science Technology, 39(5), 121-128.

Origin of silk. Encyclopedia Britannica. https://www.britannica.com/topic/silk

Saini, P., Rohela, G.K., Kumar, J.S., Shabnam, A.A., Kumar, A. 2023. Cultivation, Utilization, and Economic Benefits of Mulberry. In: Gnanesh, B.N., Vijayan, K. (eds) The Mulberry Genome. Compendium of Plant Genomes. Springer, Cham.

Setificio Paolo Carcano. 2024. *La Storia*. Available at: https://www.setificio.edu.it/pagine/la-storia

Il Sole 24 Ore (2019, Nov. 21). *Como Capitale Mondiale della seta*. Available at: https://www.ilsole24ore.com/art/como-capitale-mondiale-seta-ACMM8K0

Žontar, Josip. 1970. Gojitev sviloprejk. V: Gospodarska in družbena zgodovina Slovencev. Zgodovina agrarnih panog I, Ljubljana: DZS, 409-415.

Žontar, Josip. 1957. Svilogojstvo in svilarstvo na Slovenskem od 16. do 20. stoletja. Die Seidenzucht und das Seidengewerbe im Slowenischen Volksgebiet vom 16. bis zum 20. Jahrhundert. Ljubljana: SAZU, 1957.Textile Production in Europe: Silk, 1600–1800 | Essay | The Metropolitan Museum of Art | Heilbrunn Timeline of Art History Available at: metmuseum.org

THE SILK FROM LYON

PAULINE GUILLON

A LEGACY

In 1540, Lyon became the most important centre for silk production and silk import. But the entire silk value chain only became 100% regional around 1600, when the production of the raw material was developed in south-east France, when mulberry trees were planted to breed silkworms directly in France.

Between the various conflicts, the silk market experienced some glorious times when it flourished. In the 15th century, it enabled thousands of people to find work in this new field of activity and made Lyon famous for this expertise. Around 12,000 people worked in the silk market at every stage of production. They settled in the Lyon neighbourhoods of Saint Jean, Saint George and on the peninsula.

Later in the 17th century, the "Corporation of Gold, Silver and Silk Cloth Workers" was founded and the silk activity was recorded in a structured document called "The Great Manufactory". From then on, three functions were clearly defined: the trade supplier, who worked in the trading business, the master-merchant who ran a weaving mill and could sell his own products, and finally the work master, who ran a weaving mill but worked for one of the other two and was supported by apprentices and journeymen.

Later in the 19th century, the so-called canuts appeared, silk workers who settled in the Croix Rousse neighbourhood in multi-storey houses with high ceilings to set up and operate their looms.

LYON SILK HERITAGE TODAY

In today's Lyon, the Saint Jean and Croix Rousse neighbourhoods still have their silk heritage with the tall houses that are a symbol of these districts.

Some of the Canuts' old homes have been converted into museums, such as the "Maison des Canuts". The Brochier Soieries company has recently opened its museum, where it traces its history from its foundation in 1890 to the present day. In the Croix Rousse district, there is also a painted wall called "La Fresque des Canuts" honours the silk workers.

In addition to the monuments and artefacts made of silk, Lyon's silk industry has also left behind an important intangible heritage. This includes the weaving, dyeing and decoration

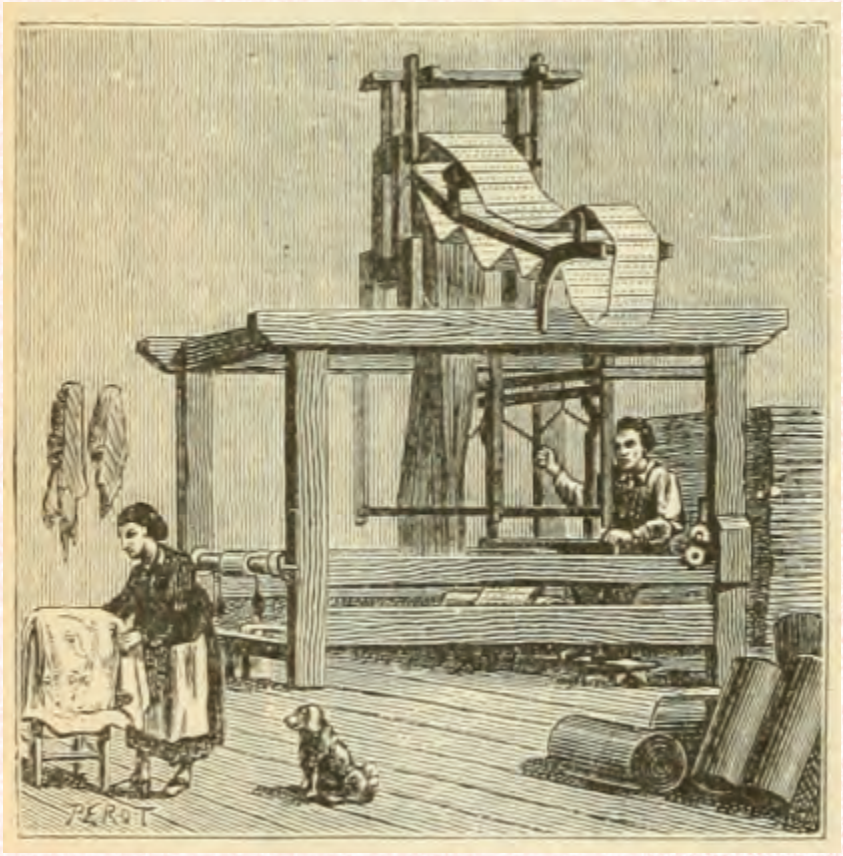


Illustration of a Jacquard loom by George Bruno, 1877.
Source: Wikipedia.

Weaving workshop in Lyon, by Joseph Burn Smeeton and Auguste Tilly. Illustration for Le Magasin pittoresque, 1875. Source: Wikipedia.

techniques that have established Lyon's reputation throughout the world. Some of these techniques are still practised today by passionate craftsmen, helping to preserve this unique know-how. In addition, major brands such as Hermes perpetuate Lyon's heritage by having their silk "carré de soie" printed in the region. Brochier Soierie also still produces its silk pieces in Lyon and carries out the "impression à la lyonnaise" typical of the region. In this particular case of automated printing, the frames move one by one over the fabric, which is fixed (temporarily glued to the heating table). Their products are then sold to high-end brands. Finally, a silk festival is held every year to promote silk expertise, called "Silk in Lyon".

Although the silk industry is no longer as flourishing as it once was, it is still an essential part of the cultural and economic heritage of the Lyon region. Moreover, it still symbolises a certain quality of textiles and is often sold by luxury brands. This is a direct legacy from the past, when it was mainly used by the upper classes.

Lyon's silk heritage has also spread to other materials and products in the textile industry. The Auvergne-Rhône-Alpes region is the leading French textile producer in terms of employment. The know-how passed on from the former silk manufacturers to the next generation has resulted in a textile manufacturing industry for traditional markets (clothing, upholstery) and for technical applications in a variety of markets for which the technical properties of textiles are essential (transport, aerospace, healthcare, sport, agriculture, industry). With the rise of the chemical industry in Lyon in the 20th century, textile manufacturers became experts in the use of synthetic fibres.

THE FUTURE OF THE SILK MARKET

It is important to know that the process of silk production has a significant impact on the environment. Mulberry trees require very large areas and huge amounts of water. For a T-shirt of around 200 g, 80 m² of mulberry trees are needed. In addition, silk from China, India or Brazil that is now used to make silk products in Europe, which means that the silk is travelling around the world to be produced, which also has an impact. The solution for the future would be to move silk production to Europe for products made in Europe. One idea could be vertical farms, i.e. mulberry trees would not grow on the ground but above the ground and would be fed by a nutrient liquid whose components are perfectly dosed and recycled in a closed cycle. In addition, the atmosphere would be controlled and the trees would produce leaves all year round. Finally, silkworms could also be reared in these towers, so that the entire silk growing process could take place in one place.

As far as the use of silk is concerned, it is increasingly being used in areas other than clothing. The Lyon-based company Brochier Soiries is a pioneer in the technical use of silk, for example in the radome socks of fighter jets and the Concorde. It is important to bear in mind that silk is also one of the natural fibres with very good technical properties. For example, it has very good mechanical resistance with a tensile strength of 0.3 to 0.5 N/tex, which is equivalent to a polyamide thread. Silk has a promising future, as silk manufacturers have been able to reinvent themselves by utilising the great properties of silk to manufacture technical products for the aerospace, automotive, sports and construction sectors.

SOURCES:

Books:

Varenne, V., Varenne, P. 2020. Canut, qui es-tu ? Libel Lyon Fondation d'entreprise Hermès SAVOIR & FAIRE - LES TEXTILES. Alres: Actes Sud, Le Méjan.

Web pages:

La soie à Lyon : une histoire fascinante qui a façonné la ville : La soie à Lyon : une histoire fascinante qui a façonné la ville - Lyon Vieux Papiers

Brochier Soiries 1890 : L'Atelier d'impression Brochier Soieries I Site officiel

L'histoire de la soie : Lyon au centre du monde : L'histoire de la soie : lyon au centre du monde ! L'histoire et les adresses... (cybele-lyon.fr)

Different Methods of Degumming of Silk: Silk Degumming Process - Textile Learner

Établissement administratif dit Condition Publique des Soies, actuellement bibliothèque et maison de la culture https://www.pop.culture.gouv.fr/notice/merimee/IA69000959

LA MAISON DES CANUTS: SAFEGUARDING THE SILK HERITAGE IN LYON

VERENA GRUBER

BACKGROUND

Lyon has a reputation for being the European capital of silk. The history of the industry dates back to the 16th century, when King François I granted the city the privilege to weave 'noble' materials. To attract weavers from Italy, he offered complete tax exemptions to all those who wished to establish themselves in Lyon. By the middle of the 17th century, there were more than 14,000 looms operating in Lyon. A major reason for the attractiveness of Lyon was the central location of the city at the confluence of two rivers, Rhône and Saône, and the proximity to both Northern and Southern France.

The industry experiences considerable growth in the 19th century, due in part to the invention of Jacquard mechanism, resulting in the increased numbers of high weaving looms. There were 12 000 weaving looms after the French revolution and more than 110 000 in Lyon area in the 1860s.

The entrance of the Maison des Canuts in the Rue d'Ivry in the Croix-Rousse district of Lyon. Foto: Verena Gruber.

The neighbourhood of *La Croix Rousse* was an independent city up to 1852 with mainly religious congregations and agriculture fields, welcoming new buildings called immeubles ateliers in the 19th century.

The workers in this industry, master weavers of gold, silk, and silver threads, were called *Canuts*, and they worked and lived mostly in the area of *La Croix-Rousse,* which became the heart of the silk industry in Lyon. It is uncertain where the word *Canut* came from; one theory suggests it originates from the word *canette*, which is the tiny bobbin inside the shuttle of a hand loom. The workshop was the place where Canuts worked, lived, ate, and slept. Classic Canut apartments are still found everywhere in the *Croix-Rousse* neighbourhood, and they feature the distinctive high wood ceilings, which were necessary to accommodate the Jacquard hand looms, which are about 4 meters tall.

The golden age of the silk industry in Lyon came to an end due to the economic difficulties in the 1970s and 1980s. Competition from rayon and other synthetic fibres, heightened international competition, and changing consumer lifestyles lead to a delocalisation of silk manufacturing to countries with lower labour costs. The few surviving houses have repositioned themselves in market niches such as luxury, haute couture, and antique fabric restoration. Around the same time, there was a visible trend towards the "museumization" (Gril-Mariotte, 2023) of the remaining silk heritage in Lyon. The *Maison des Canuts* is one of the institutions that nowadays contribute to the safeguarding of the Lyon silk heritage and know-how.

HISTORY OF THE MAISON THE CANUTS

The *Maison des Canuts* was founded in 1970 to allow people discover the history INCLUDEPICTURE "https://maisondescanuts.fr/wp-content/uploads/2021/08/Maison-des-canuts-12-768x512.jpg" * MERGEFORMATINETof Lyon's silk industry and of its

The hand looms exhibited in the workshop area of the Maison des Canuts. Foto: Verena Gruber.

Canuts. The site has historic significance: it was once the place of the headquarters of the Weavers' Union (*Coopérative des Canuts*). After having served the community of weavers for many centuries, with the decline of the silk industry in Lyon the Union saw a shrinking number of members in the second half of the 20th century. At the same time, the public became increasingly interested in understanding and witnessing the craft of silk weaving. News about the restoration of the king's chambers in the *Château de Versailles* executed by Tassinari & Chatel and Prelle et Cie - two workshops that exist to the present day and continue using Jacquard hand looms – contributed to a renewed interest in "how it works, how it is done." In 1970, the remaining union members thus decided to create a place to safeguard and raising awareness about the silk craft in Lyon. Their headquarters thus became a place to welcome everyone interested in understanding silk weaving and the history of silk and *les Canuts*.

In 2004, Virginie and Philibert Varenne, two specialists in the textile industry and long-established "*Croix-Roussiens*", took over the *Maison des Canuts*. In the years that followed, the two experts repaired the surviving looms, significantly changed the original infrastructure by enlarging the space and improving the decoration, the scenography, and the signage.

The *Maison des Canuts* is not a museum but, in legal terms, a limited liability corporation (LLC; in French: *Société à responsabilité limitée* (SARL)). Virginie and Philibert Varenne have successfully positioned it as a "*lieu de l'interprétation du patrimoine*" – a place for heritage interpretation, thanks to the display of original machinery and its rich exhibits on the origins of gold and silver thread workmanship, the organization of production sites, and the revolts of the *Canuts*. The *Maison* also provides weaving demonstrations on traditional hand looms.

Virginie and Philibert Varenne offer guided tours which either start in the main building or in a workshop space on the opposite side of the street which hosts original 19th century handloom machines. The two owners have continuously developed the experience for visitors to be educational and to provide food for thought. Nowadays, they welcome local inhabitants, tourists, as well as school pupils who learn about the history of the city.

WEAVING WITH HAND LOOMS

The guided tour at the *Maison des Canuts* includes a demonstration of the machines and an illustration of the delicate and sophisticated process of weaving silk by crossing the warp threads (in the length) and the weft threads (in the width). The demonstration also includes information about different styles of silk weaving, from brocade to velvet.

The hand loom is equipped with a Jacquard mechanism. Invented around 1804 by Joseph Marie Jacquard, the device revolutionised textile production by simplifying and automatising the weaving of fabric patterns. It consists of a punch card with binary information, displaying the pattern that feeds into the machine equipped with needles. If the needle meets a hole in the punch card, a mechanism lifts the warp threads so that weft threads can be passed through in order to weave the pattern. The weaver passes the coloured threads underneath these warp threads by hand and one by one in order to weave the pattern. If there are no holes in the punch card, the needles will stay in their place and not move. As a result, no warp threads are lifted meaning there are no threads to pass, and thus no pattern to weave. The Jacquard mechanism basically allowed the loom to be programmed. Complex patterns take a long time (about 20 - 35cm progress per workday).

In the main building, there are various exhibits that showcase machines, objects, techniques, historical events, and protagonists. Virginie Varenne explains the history of silk production up until the present day. Her presentations allow visitors to better understand the tradition and heritage of silk weaving in Lyon and serve as a means of awareness raising. Virginie stresses the importance of natural fibres and the skills involved in craft such as silk weaving. She makes an urgent case against fast fashion but to instead valorise and uphold the French fashion traditions. She also informs visitors about the newest legislation relevant to the textile industry, such as the French legislation against waste for a circular economy (*Anti-gaspillage pour une économie*

Demonstration of the Jacquard mechanism. Foto: Verena Gruber.

Shuttles of silk threads in colors allow to create a complex pattern. Foto: Verena Gruber.

circulaire), which includes regulations about the traceability of textiles.

TODAY

Hand weaving is still practiced today in Lyon. Two remaining workshops use the Jacquard hand looms: the House of Prelle as well as Tassinari and Chatel continue do date to weave high-quality silks for the upholstery market.

Virginie and Philibert Varenne continue to organize tours of the *Maison des Canuts* with a lot of passion for the craft and an unabated motivation to pass it on to future generations. When asked what she would like people to take-away from their visit at the *Maison des Canuts*, Virginie responds that "they should change their textile consumption and ban fast fashion, that they are interested in the culture of textiles, because it is not far, at least in France... and that they thank this profession because in fact it is part of our history."

As a place for heritage interpretation, the *Maison des Canuts* thus contributes to raise awareness about the living silk heritage of the Lyon region and safeguards precious knowhow which would otherwise be lost.

SOURCES:

Bonetto, P., Hofmann, B., & Prause, G., 2014. Rise and fall of the Lyon silk cluster: a case study about entrepreneurial sustainability. In: Entrepreneurship and Sustainability Issues, 2(1), 1.

Gril-Mariotte, A., 2023. Les patrimonialisations de l'industrie textile en France entre muséification et valorisation des savoir-faire (xxe-xxie siècle). In Situ. Revue des patrimoines*, (50).

How a French city became the European capital of silk: https://www.euronews.com/travel/2021/02/05/lyon-in-silk-a-historyof-the-industry-which-shaped-the-city

How Lyon became the epicentre of Europe's silk industry: https://theculturetrip.com/europe/france/articles/how-lyonbecame-the-heart-of-europes-silk-industry

La Soierie: https://www.patrimoine-lyon.org/traditionslyonnaises/la-soierie

Maison des Canuts: https://maisondescanuts.fr/histoire/

Maison des Canuts: la prestigieuse histoire de la soierie lyonnaise: https://www.leprogres.fr/magazine-tourisme-etpatrimoine/2020/11/21/maison-des-canuts-la-prestigieusehistoire-de-la-soierie-lyonnaise

Manufacture Prelle: https://prelle.fr/en

Manufacture Tassinari & Chatel: https://lelievreparis.com/tassinari-et-chatel/collections

Pliez, V., 2021. Déclin et résilience de l'industrie textile rhônalpine: Des années 1950 à nos jours (Doctoral dissertation, Université de Lyon).

The brand Philéone: https://phileone.fr/en

The law AGEC: https://www.gouvernement.fr/les-vetementsinvendus-ne-pourront-bientot-plus-etre-detruits.

Varenne, V. and Varenne, P. (2020) Canut, qui es-tu? Lyon: Édition Libel.

Vernus, P. (2004) Regulating the Activity of a Business Community: Employers' Organisations in the Lyon Silk Industry, 1860s-1939. In: Business and Economic History On-line, 2, 1-18.

THE GOLD THREAD: PAST AND PRESENT OF COMO SILK DISTRICT

MARTA PIAZZETTI

HISTORY

Silkworm breeding was introduced in the Como area during the 15th century and quickly flourished thanks to the efforts of Gian Galeazzo Visconti and Ludovico Sforza, Dukes of Milan. They mandated peasants to cultivate mulberry trees in their fields, a strategic and political move aimed at supplying the textile industry in the Milan Dukedom, renowned for its finest brocade. Consequently, families in Como began breeding silkworms and delivering the cocoons to the nearest spinning mill. By the 16th century, the silk industry had become one of the most relevant in the area, overshadowing wool production, which had been historically predominant. The Como silk market extended beyond national borders, with its products sold in Germany, Austria, and Russia. It has been estimated that, in 1840, the 93% of cultivated land in the Como area was devoted to mulberry trees cultivation to feed the silkworm. The importance of the industry for the territory is evidenced by the establishment of a municipal school (between 1867 and 1869) specifically devoted to the training of workers in silk production. This school aimed at developing and training qualified designers, thereby reducing the dependence on Lyon, where textile designers were traditionally recruited. Later, in 1903, the school became the Royal School for Silk, which still exists and operates as the Istituto Statale di Istruzione Superiore Setificio Paolo Carcano.

FROM HANDCRAFTED TO MACHINE-MADE: SILK PRODUCTION AFTER THE INDUSTRIAL REVOLUTION

During that time, numerous spinning mills were located in the area, as well as in the neighbouring regions of Northern Italy, where silkworm cocoons were unraveled into silk threads. In 1815, the first steam-powered mill was built in Cassina Rizzardi near Como, which is considered a milestone in the region's silk industry development. Steam-mills, mechanical looms, and the introduction of electricity transformed production methods, shifting from handcrafted to machine-made processes. Como rapidly emerged as the reference city for silk. In 1899, the city of Como hosted an international exposition on the shores of the

Spools of silk threads. Source: Museo della Seta Como

Silk loom shuttle. Source: Museo della Seta Como

lake, showcasing silkworm breeding, threading tools (e.g., chassis), and related books.

The geography and environmental characteristics of the territory, characterized by numerous watercourses, facilitated the establishment of mills as well as twisting and spinning factories. In silk mills, women and young girls as young as 9 years old were employed as spinners, with low wages, long working hours, and challenging conditions. The life at the spinning mills was indeed harsh: for instance, spinners had to insert their hands into boiling water to extract the silkworm cocoons – a necessary step to soften the sericin and unravel the silk thread.

The entire supply-chain was present in the area, including numerous dyeing factories. For many men, securing a position as a *tintore* (i.e., a worker in a dyeing factory) was a way out from poverty, thanks to the comparatively better wages offered by dyeing factories. The multi-coloured hands of dyers thus became a symbol of success and wealth. However, conditions within dyeing factories were also harsh, with significant detrimental effects on the worker's health. *Tintori* suffered from chronic respiratory diseases, cancer, and deforming arthritis. Some of the substances responsible for these adverse health effects (e.g., aniline, formaldehyde) are now banned. Furthermore, such chemicals were discharged into watercourses, colouring them cyclically with the fashionable colors of the moment. These practices had negative effects on the environment, impacting the flora and fauna of the area.

The importing of raw silk from Asia led silkworm breeders to cease their activity, which was definitely abandoned from the 1930s onward. World War I and the Great Depression exacerbated the economic challenges and unemployment caused by Asian competition. However, despite fluctuations, the silk sector continued to prosper and evolve during this period. On one hand, it was supported by the protectionist policies of the Fascist regime; on the other hand, new artistic movements such as Futurism inspired silk designers.

An important advancement came in 1920 with the introduction of photoengraving, a serigraphic printing technique on fabric originally developed in Lyon. Initially, the process was entirely manual, from sketching designs and preparing printing frames to the actual printing on fabric. Subsequently, it was automatized from the second half of the 20th century. Photoengraving further boosted creativity of the designers, garnering recognition worldwide. A notable example is the Industrie Seriche Nazionali founded by Guido Ravasi, which brought pride to the region with its creative printings and the high-quality ties and home textiles.

Despite new techniques are available today, serigraphic printing remains the flagship of Como silk production.

THE RISE OF THE INDUSTRY

During the Second World War, the silk industry faced challenges due to limited availabilities of materials and the Nazi requisition of factories for troop supply. However, after the war, the industry grew consistently, favoured by low labour costs, limited competition, and the European Recovery Plan. Innovation and a workforce of highly specialized workers, supported by the educational system, played pivotal roles in the industry development and improvements of quality and standards. Thanks to its high-quality products, Como's silk production began targeting luxury companies, developing long-term collaborations with fashion designers such as Emilio Pucci, Sorelle Fontana, and Givenchy. Silk companies and fashion designers collaborated closely to create and customize design patterns.

The district's remarkable creativity was not limited to printing but was fostered by the production of new mixed textiles, such as rayon-silk. By 1960, the Como silk district definitively surpassed French production in Lyon, historically its competitor, in terms of both quantity and quality.

The gradual decline of the industry commenced with the introduction of new textiles such as polyester and nylon fibers. Globalization and protectionist policies were additional challenges that compelled entrepreneurs and companies to pursue divergent directions. On the one hand, some companies began vertically integrating multiple processes involved in silk production to control the core of the supply-chain and ensure high-quality standards. For example, "Fabbrica Seterie Riccardo Mantero" started to control the weaving, dying, and printing processes in 1964.

On the other hand, other companies progressively specialized in specific stages of silk production, such as jacquard weaving or dyeing, or focused on specific products like foulards. This progressive

specialization resulted in a highly fragmented supply-chain, a characteristic still defining the Como district.

Despite these challenges, the period between late 1970s and mid-1990s was one of the most prosperous periods for Como silk. The silk district counted more 35.000 firms at the beginning of the 1990s. This success was supported by visionary entrepreneurs, whose vision and imagination fuelled innovation and creativity. They conducted research on technology, chemistry, and art, while also exploring past techniques and styles. Notable among these experiments was the creation of washable silk created by Antonio Ratti, founder of Ratti S.p.a. Additionally, in 1991, Antonio Ratti embarked on a project with Indians technicians aimed at reintroducing the use of natural dyes in the industrial production.

THE CAUSES OF DECLINE

Since the mid-1990s, the district has undergone a steady, and at times abrupt, decline. The downturn was so significant that by the end of the 1990s, silk production accounted for only the 10% of all processed fabrics in Como.

The fragmentation of the supply-chain played an important role. Managerial myopia and an attitude towards individualism hindered the formation of intra-firm networks and collaborations crucial for supporting the industry. This individualist mindset also partly explains some attempts, not always successful, to relocate the production to Far East (e.g., China) or Eastern Europe (e.g., Romania) in an effort to reduce costs. Indeed, the rising of labour costs led to increased prices for Como silk, rendering it no longer competitive compared to other countries.

The decline had important consequences, including job losses and the abandonment of industrial sites. For instance, since the closure of Ticosa silk factory in 1982, its thermal power station remains a visible scar in the heart of Como city. The downturn also caused the irremediable loss of invaluable archival industrial data. Only in a few instances were these priceless materials preserved, thanks to private donors or accidental discoveries, such as the archive of "Filanda e Tessitura Costa", containing textile designs and industrial/business data of the company until 1964. Some of its timeless designs have recently been utilized by Dior for its collection.

THE COMO DISTRICT IN THE NEW MILLENNIUM

Today, Como stands as one of the most important textile districts in Italy, retaining its status as Europe's premier silk district, wherein the complete process of silk transformation is present. 80% of all European silk is made in Como, of which

Detail of silk printing board. Source: Museo della Seta Como

70% is exported to international markets. At the end of 2022, the area counted 1,048 companies employing 12,925 individuals.

The supply-chain remains highly fragmented, dominated by many specialized independent firms, focused primarily on the luxury sector. Approximately 40% of silk companies serve as suppliers to luxury brands. The district remains committed to high quality standards, exemplified by its collaboration with China for silk quality control. Moreover, industry revitalization efforts include a commitment towards sustainability, with initiatives for the reduction of environmentally dangerous chemicals as well as the promotion of circularity for the silk regeneration.

There are also some initiatives for the reintroduction of silkworm breeding in the Como region, primarily aimed at preserving traditions and generating social value through the involvement of vulnerable people. Inspired by some notable examples in southern Italy, producer associations are exploring the possibility to produce small quantities of silk 100% made in Como.

Despite its challenges, the city and silk entrepreneurs are proud of its industrial heritage and showcase remarkable efforts to preserve its history. In this vein, the Silk Museum of Como ("Museo della Seta Como") was initiated by a descendant of "Tintoria Pessina", an important dyeing factory, who donated the first machineries for the exhibition. Today, the museum houses a collection that characterized the history and the evolution of the industry, including objects (e.g., drawings, historical clothing), materials, machines, and working tools (e.g., a 'double deck' throwing machine, conditioning stoves). The exhibition also describes how silk manufacturing existed in the province of Como. Currently, the Silk Museum integrates sustainability into its storytelling, highlighting historical criticalities, such as the poor working conditions and the social impact of the industry decline, as well as addressing contemporary challenges like sustainable water consumption.

Detail of heddle loom. Source: Museo della Seta Como

Another important institution for the preservation of the Como silk tradition and its heritage is the 'Fondazione Antonio Ratti', which includes the Museum for Fabric studies. Funded in 1985 by Antonio Ratti, it safeguards one of the most remarkable textile collections in Italy. The collection includes more than 3,300 textiles from across the globe, such as Indigenous American textiles, French silks, Japanese kimonos, spanning from the 3rd to the 20th centuries. Continuously expanding thanks to private donations or new acquisitions, this collection is publicly accessible via a digital catalogue, which is a point of reference for students and scholars. Additionally, the 'Fondazione Antonio Ratti' welcomes and hosts students from around the world for internships or research on fabric history. Guided tours offer visitors an insightful overview of the evolution of textile art and industry, encompassing not only silk but also other textiles.

SOURCES:

Alberti, F.G., 2006. The decline of the industrial district of Como: Recession, relocation or reconversion? *Entrepreneurship and Regional Development*, 18:6, 473-501, DOI: 10.1080/08985620600884792

Avellino, L., 2023. "They have no property to lose": The impasse of free labour in Lombard silk manufacturers (1760-1810). *International Review of Social History*, 68, 135-155.

Bocconcelli, R., Grandinetti, R. and Tunisini, A. (2015). "Made in Italy": The Italian Contribution to the Development of Business Marketing Discipline and Practices. *Journal of Business-to-Business Marketing*, 22:3, 161-196, DOI: 10.1080/1051712X.2015.1081013

Brivio, S., 2023. Seta made in Como? Per ora è un sogno ma i progetti ci sono. La Provincia (Aug. 17) Available at: https://www.laprovinciadicomo.it/stories/Economia/seta-made-como-per-ora-e-sogno-ma-progetti-ci-sono-o_1608038_11/

Casati, 2023. Archivi per l'impresa, archivi per la storia: esplorarion nel fondo delle filande e tessiture Costa dell'Archivio di Stato di Como. *Economia Aziendale Online*, 14(4).

Crivelli, G., 2019. Como rilancia il primato mondiale nella seta. *Il Sole 24 Ore* (Nov., 22) Available at: https://www.ilsole24ore.com/art/como-rilancia-primato-mondiale-seta-ACFKeRz

Crivelli, G., 2021. Così Mantero dà nuova vita alla seta inutilizzata con il progetto Resilk. *Il Sole 24 Ore* (July, 23). Available at: https://www.ilsole24ore.com/art/grazie-progetto-resilk-mantero-da-forma-e-seconda-vita-seta-AE4UnRX

F.A.R. Fondazione Antonio Ratti (n.a.). *Antonio's Dream. A Journey through Art and Textile* in Lombardia (n.a.). Como, le Vie della Seta. Available at: https://www.in-lombardia.it/it/visitare-la-lombardia/shopping-e-esperienze-lombardia/como-le-vie-della-seta

Il Sole 24 Ore, 2019, Nov. 21. *Como Capitale Mondiale della seta*. Available at: https://www.ilsole24ore.com/art/como-capitale-mondiale-seta-ACMM8K0

Mantero, 2024. *Chi Siamo*. Available at: https://www.mantero.com/pages/chi-siamo#:~:text=Tutto%20inizia%20nel%201895%20con,nel%20comparto%20serico%20in%20zona

Moia, I., 2020. *Bachicoltura Rivoluzionaria*. Available at: https://www.bachicoltura-tessitura-agricoltura.com

Museo della Seta Como, 2024. *Como, Sustainable City of Silk*. Available at: https://museosetacomo.com/seta-articolo.php?post_id=246&lang_id=2

Museo della Seta Como, 2024. *Once Upon a Time There Was Silk*. Available at: https://museosetacomo.com/seta-articolo.php?lang_id=2&ev_id=0&post_id=227&vid_id=0&pag_id=0

Museo della Seta Como, 2024. *The Bitter Life*. Available at: https://museosetacomo.com/seta-articolo.php?post_id=248&lang_id=2

Ota, Y., 2013, L'industria tessile. In *Il contributo italiano alla storia del pensiero - Tecnica*. Roma: Treccani.

Parco Lura (n.a). *Il Comasco, dai Bachi da Seta ai Tessuti Pregiati*. available at: https://www.parcolura.it/pagina.php?id=80

Rosina, M. and Chiara, F., 2008. *Guido Ravasi: Il Signore della Seta*. Como: Nodo libri.

Rozzi, A., Malpei, F., Bonomo, L., Bianchi, R., 1999. Textile wastewater reuse in Northern Italy (Como). Water Science Technology, 39(5), 121-128.

Setificio Paolo Carcano, 2024. *La Storia*. Available at: https://www.setificio.edu.it/pagine/la-storia

SILKWORMING IN GORIZIA

PETRA KOLENC

HISTORY

Silkworm farming was historically practised in Slovenia in Carniola, Styria and Carinthia during different historical periods. However, an important site for silkworm farming in the European context was the Gorizia region, a region that today is divided between two countries, Italy and Slovenia.

The craft of silkworm breeding arrived in the Gorizia-Gradisca region from the Republic of Venice, where the first attempts to cultivate white mulberries and silkworms took place in the 14th century. Mulberries were planted in South Tyrol in the 15th century, the same time that silkworm breeding spread also to Friuli Venezia Giulia, where raw cocoons were sold at the St. Lawrence Fair in Udine and landlords obtained a considerable income from the free trade of mulberry leaves, silk cocoons, and raw silk. The craft spread slowly, with large-scale planting of mulberry trees began only at the beginning of the 17th century – first in the flat area west of the Soča River and later also east of the Soča and in the hilly area, which was necessary for the breeding of silkworms. This was also the beginning of the production of silk fabrics in Gorizia.

Small fragments of silk fabrics from different periods, sewn together to form a precious patchwork, known by the curious name of "Seculin blanket", exhibited in Civic Museum of Gorizia. Source: Artemorbida.com.

It was not until the transition from the 17th to the 18th centuries that Viennese authorities requested the promotion of national trade and crafts. Thus, the number stoves with hot water (fornelli), which frees the silk filaments and readies them for reeling, in Gorizia-Gradisca increased over the years as shown by the number of fornelli totaling 70 in 1720, 187 in 1732, more than 200 in 1744, and 218 in 1750. On the other hand, there were a total of 14 fornelli in Trieste and Rijeka during this period. At the beginning of the 18th century, the Court Chamber also advocated the construction of a silk spinning mill in Stražice by the Soča River, and soon after also the state built a silk spinning mill in Fara on the Soca at its own expense.

The silk spinning mill had 6 fornelli, 2 incanatories and 2 spinning rooms (filatories). The silk spinning mill tried to process as much domestically produced silk as possible to support the silk trade and manufacturing in Gorizia; however, much of the raw silk was exported. The better silk went to Holland, England, Hamburg, Venice, and Vienna, while the low quality silk processed in the filatories remained in Gorizia or in Burgenland. The first silk mill workers came from Rovereto near Lake Garda, and there were also some Venetian craftsmen, as well as those from Udine.

There was a sense of great potential for the silk industry, and the Trade Commission recommended increasing mulberry cultivation in the region, especially in wastelands, on municipal land and along public roads. In 1764, 60,000 mulberry trees were planted along the Gorizia-Aquileia road and about 20,000 trees on private lands. Silk production in Gorizia was slow to develop. However, due to a lack of capital and the fact that calculating Venetian merchants preferred to buy cheap raw silk to be woven elsewhere rather than invest in local production.

In the 1740s, the silk industry in Gorizia became better organised and expanded beyond the mediaeval production order. Production was divided into three areas: preparation of raw materials into yarn, weaving, and finishing of products. Later, production was also better organised, and the number of weavers also increased, with 34 weavers workingere counted in Gorizia alone. In 1730, about 9,000 kg of raw silk were produced in Gorizia and Gradisca.

The volume of silk production in Gorizia reached its peak in the 18th century. The silk trade was directed to the markets of Venice, Bassano, Verona, Padua, and Udine. The spinning mill in Farra, a large centralised factory commissioned by Charles VI to promote the economic transformation of the region, was an important and praised producer in the supply chain of raw materials and a centre for the production of luxury yarns and fabrics. The region was not known for its quality fabrics; on the contrary, the production of fabrics was of medium quality due to the expansion of hand mills, but damask was considered particularly well made.

In the 1830s, the economic stimulus led to a return to silk production in all Slovenian lands. There were presumably more than 2 million trees and 300 000 kg of cocoons in Goriška. However, silk production began to decline in the middle of the 19th century due to competition from foreign markets, changes in fashion trends, and problems with the supply of mulberries. All this led to the decline of the silk industry in Gorizia. In the second half of the 19th century, the silkworm disease finally put an end to all other major attempts of silkworm farming in the Gorizia-Gradisca region.

Even in the 19th century, people were still trying to save the traditional yellow silkworm. However, on the advice of agricultural societies and in order to

The circular twisting machine of the Gorizia Fashion Museum is a real technological jewel, very common between the Middle Ages and the eighteenth century, but now the only survivor of its category. Source: Gorizia Fashion Museum.

A mature mulberry tree. Source: Wikipedia.

Kavalier, as they called the caterpillar of the silkworm in Goriška, before it cocooned. Source: Pokrajinski muzej Ptuj-Ormož.

avoid great losses, they preferred the new East Asian silkworm species (the caterpillar of the yam butterfly), which was more resistant and required the leaves of the ajlant as food. This period brought the establishment of a unique institution that later served as a model for similar institutions throughout the world: The Institute for Silkworm Research. Founded in Gorizia in 1869, this institute is considered both the first scientific and agricultural institution in Slovenia and the first of its kind in the world. Similar institutes in Padua, Trentino and elsewhere in Europe later followed.

By the end of the 19th century, silk cultivation was already one of the main sources of income in the Gorizia-Gradisca region, which had the second largest production of silk cocoons after South Tyrol. Silk cultivation was reserved for a few nobles and some townspeople, but most of the cultivation was done by the peasant population, for whom this branch of the economy represented an important additional income or one of the basic annual incomes. However, the favourable prices of wine and fruit at the turn of the 19th century displaced the cultivation of silk by the

Transformation of silkworm from cocoon to butterfly. Source: Pokrajinski muzej Ptuj-Ormož.

The cocoon of the domesticated silk moth; unlike wild silk moths, its cocoon is entirely white. Source: Wikipedia.

peasantry. Many mulberry plantations were replaced by vineyards or orchards. The price of silk dropped sharply due to imports from East Asian countries. The subsequent battlefield of the First World War dealt a severe blow to the economy of Goriška. Although the new Italian state encouraged the resumption of silkworm farming, the silk industry in Gorizia did not return to its pre-war state, as was the case in Friuli and South Tyrol. The silk industry became largely the domain of the Friulians.

After the Second World War, silk production was taken over by Japan, which at that time surprised with an optimization of production: the cultivation of cocoons that yielded two to three thousand metres of silk thread, ten times the thread length of traditional silkworm farming in Europe, which resulted in the definitive abandonment of mulberry plantations. This was also the case in Goriška, where only a few silk growers harvested the product until the 1960s.

NATURAL SILK EXTRACTION:

Silk is extracted from the cocoons or galettes of silkworm caterpillars, which hatch from the eggs of the small silkworm butterfly (bombyx mori). The caterpillars feed on fresh mulberry leaves, so planting the white mulberry tree was a prerequisite for silkworm farming. The caterpillars molt four times in a 32-day cycle before pupating. The silk cocoons are produced by the silkworm caterpillars, which surround themselves with a silk thread that forms a cocoon when they are cast. To obtain the silk thread cocoons are placed in a cauldron of water heated by an oven, the top layer of the cocoon is removed, and the ends of several cocoon strands are joined together and pulled onto a thread of twine to produce a single strand of raw silk. It is known that in Gorizia in the 18th century, 6-7 cocoons were used for an organza thread and 8-10 cocoons for a weft thread. The thread was cleaned, the knots were removed and the wool was wound with a device called a wrapper (filanda), whose capacity depended on the boilers with ovens.

The resulting threads were still too thin for further processing, so they were wound on bobbins, reassembled and twisted in the organza tube winders, then wound in the spinning room, then reassembled in the incanatorium, again several times, and finally twisted again in the filleting room and mounted on rollers. For the weft thread, however, they were not filleted, but only twisted. From this were made the threads for the looms, which were used to make various types of fabrics (woven fabrics, ribbons, cords, socks, etc.).

IMPORTANCE OF GORIZIA SILKWORM BREEDING

Silk production in Gorizia played an important role in the history of the textile industry, as the town was once part of a large silk-producing region in Europe. Gorizia was one of the leading centers for silk production in this part of Europe between the 16th and 18th centuries.

During this period, silk production in Gorizia reached a high level. The city was famous for its cultivation of silkworms, which provided the raw material for silk thread.

The silk industry in Gorizia faced competition with other important silk production centres in Europe such as Lyon in France, Turin in Italy, and Augsburg in Germany. Nevertheless, silk production in Gorizia was very successful and had its own style. Gorizia was mainly known for the production of silk yarns and raw silk, which were appreciated both in national and international trade.

It is important to emphasize that the silk industry in Gorizia was an essential part of the local economic and cultural history. The heritage of the silk industry is still alive in this part of Italy and testifies to the important role silk production played in Gorizia's past.

SOURCES:

Adamič, F.: Mayer, Evgen, pl. (1889–1970). 2013. Slovenska biografija. Slovenska akademija znanosti in umetnosti, Znanstvenoraziskovalni center SAZU, 2013.

Holz, E., Carnelutti, J. 1997 Svilogojstvo. In: *Enciklopedija Slovenije*, 406-407.

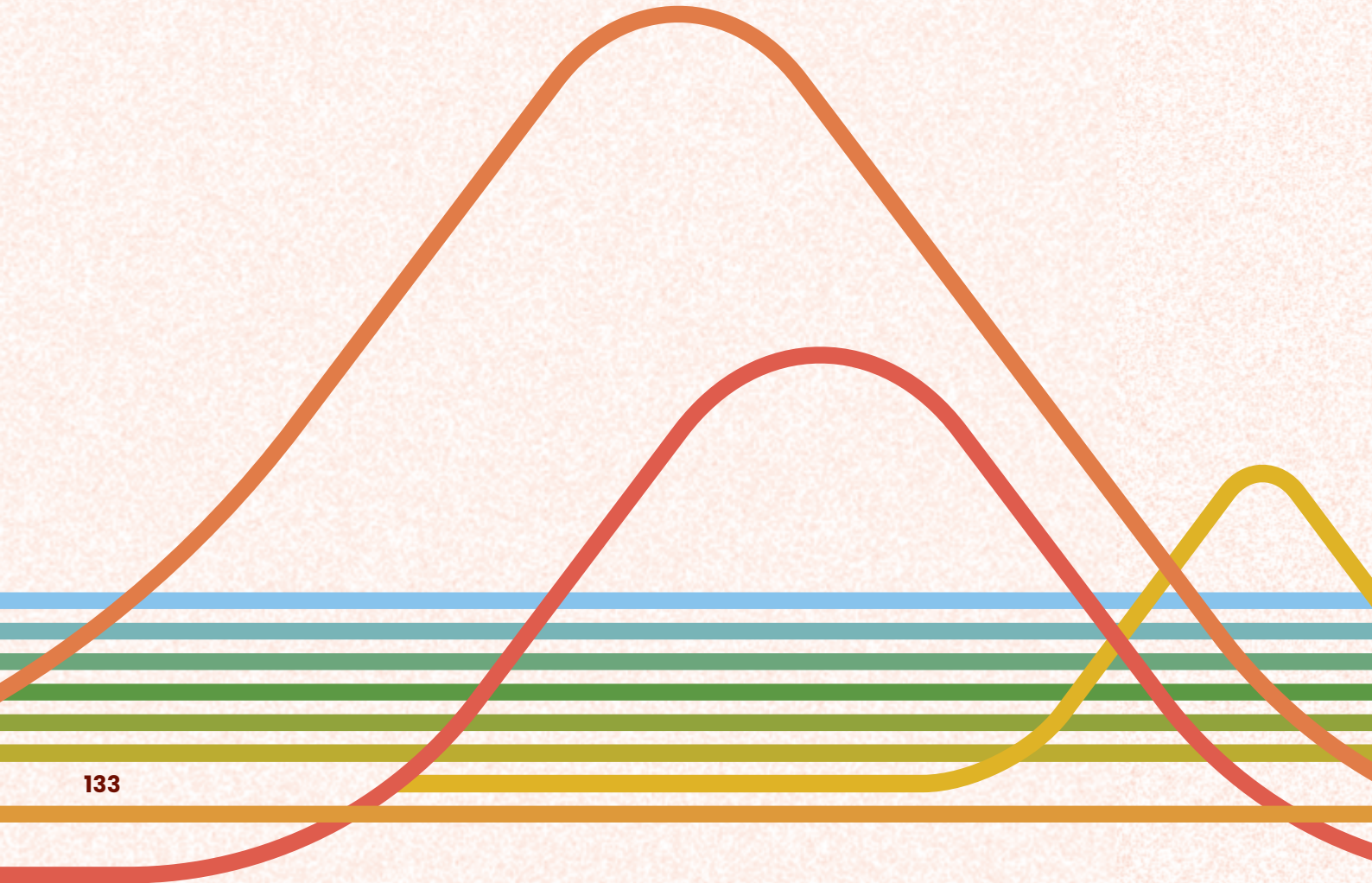
Ipavec, V. M. 2006. Murve in kavalirji. Svilogojstvo na Goriškem. Nova Gorica. Ljubljana: ZRC SAZU.

Žontar, J. 1957. Svilogojstvo in svilarstvo na Slovenskem od 16. do 20. stoletja. Die Seidenzucht und das Seidengewerbe im Slowenischen Volksgebiet vom 16. bis zum 20. Jahrhundert. Ljubljana: SAZU.

Žontar, J. 1970. Gojitev sviloprejk. V: Gospodarska in družbena zgodovina Slovencev. Zgodovina agrarnih panog I, Ljubljana, 409-415.

The seculin blanket, 60-years of history in a patchwork https://www.artemorbida.com/the-seculin-blanket-60-years-of-history-in-a-patchwork/?lang=en

La seta e le filande del Novecento in mostra a Gorizia: https://www.ilgazzettino.it/fotogallery/nordest/la_seta_le_filande_novecento_mostra_gorizia-2124613.html



5. THE LIVING TEXTILE HERITAGE OF THE ALPS

The living textile heritage of the Alps is linked to the textile traditions and practices passed down through generations in the Alpine region. It encompasses the knowledge, skills, techniques and cultural expressions associated with textile production, such as weaving, embroidery, knitting and other textile crafts.

In the Alpine region, the living heritage of the Alps is of great importance due to its cultural and historical value. It represents a tangible and intangible cultural heritage that reflects the identity, creativity and craftsmanship of local communities in the Alpine region.

Textile production is part of the intangible cultural heritage and holds various values, including historical, cultural, artistic, educational and economic significance. The craft of textile production has developed over a long period, with traces of some fibre processing techniques dating back to prehistoric times. Textile craftsmanship contains fragments of history, knowledge and understanding from different historical periods. In addition, the intangible heritage carries the particularities of the local environment.

Textile craftsmanship itself is closely interwoven with the aesthetics and artistic expression of a particular culture or nation. Think of different forms of lace, intricate embroidery or fascinating patterns on printed or woven fabrics.

Furthermore, we should not overlook the economic value that was and is of great importance when dealing with textile heritage.

Textile heritage also has educational value. When specific knowledge is lost due to widespread modernisation, including textile practices in national and UNESCO lists of intangible cultural heritage is important. Such recognition includes particular knowledge that can be preserved for future generations by promoting it.

The UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage recognises the importance of safeguarding and promoting living heritage practices. Until June 2024, four elements connected with the textile heritage of the Alps were inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity. Two inscriptions closely link sheep breeding and wool production: “Alpine pasture season in Switzerland” and the multinational inscription of “Transhumance”, the seasonal droving of livestock in which Austria, Italy and France are also participating. Alpine pasture season or transhumance, in which cattle, sheep and goats are driven up to high pastures to utilise the additional fodder, contributes to the preservation of natural landscapes and creates economic and social ties between the local population and the alpine farmers. A whole socio-economic system has developed around transhumance and seasonal grazing, ranging from gastronomy and local handicrafts to the festivals that mark the beginning and end of the season.

Two inscriptions are more directly related to textile production: “Bobbin lacemaking in Slovenia” and a multinational inscription on resist block printing and indigo dyeing called “Blaudruck/Modrotisk/Kékfestés/Modrotlač”, which is still a living heritage in Austria and Germany. Blueprinting is a traditional textile printing and dyeing technique practised in various European regions, and to some extent, in the Alpine part of Europe. It involves the use of wooden blocks, resist paste and indigo dye to create intricate and vibrant patterns on fabric. Its significance lies in its cultural and artistic value and historical importance to the textile industry. The technique has been passed down

from generation to generation, preserving the traditional patterns, designs and skills.

Bobbin lace-making in Slovenia, known as *klekljanje* in Slovenian, is a traditional craft in which intricate and ornate lace patterns are woven using bobbins and pillows. This practice has a long history in Slovenia and is of great cultural and artistic value. The art of lace-making is passed down from generation to generation in Slovenia, with different regions of the country developing their unique styles and techniques. This craft requires excellent skill, precision and patience as the lace-makers meticulously work the bobbins to create complex patterns and motifs.

In the Register of Good Safeguarding Practices of UNESCO Regional Centres For Craftsmanship: A Strategy For Safeguarding The Cultural Heritage Of Traditional Handicraft in Austria are also inscribed. The Werkraum Bregenzerwald, the Hand.Werk.Haus Salzkammergut and Textiles Zentrum Haslach are three centres in Austria run by local, traditional craftspeople who work with international artists, educational institutions, craft businesses and other institutions to help safeguard their practices for future generations. These centres offer a range of public activities to preserve craftsmanship, including woodwork, painting, and textiles, which give the communities a sense of identity and continuity.

Knowledge transfer is also connected to Compagnonnage, a network for the on-the-job transmission of knowledge and identities in France, inscribed in the UNESCO list as the practice of knowledge transfer. The French Compagnonnage system is a unique method of transferring knowledge and expertise related to professions working with stone, wood, metal, leather, food, but also textiles. Its originality lies in the synthesis of different methods and processes of transmitting knowledge: national and international educational journeys (known as the 'Tour de France' period), initiation rituals, school teaching, traditional learning and technical apprenticeships.

Two UNESCO world heritage sites are highly connected with textile heritage and production in the alpine region: Crespi d'Adda in Lombardy, Italy, and the Historic site of Lyon in France.

The workers' village of Crespi d'Adda is located in the Italian region of Lombardy, nestled between the Adda and Brembo rivers and the foothills of the Alps. It is an outstanding example of the 'company towns' that were built in the 19th and early 20th centuries in Europe and North America by enlightened industrialists to fulfil the needs of workers. The town remained under the ownership of a single company until the 1970s. After that, many buildings, especially houses, were sold to private individuals. The site is still remarkably intact and is partly used for industrial purposes.

In terms of textile heritage, Lyon is important because of its rich and powerful silk industry. For the textile heritage, the most important part of the city is the neighbourhood of La Croix-Rousse. Since the 19th century, Croix-Rousse was the home of Lyon's silk workers. 30.000 *canuts* (as the Lyon silk workers were called) turned this district into an industrial area and contributed to Lyon becoming an important centre for textiles in Europe. In this neighbourhood, past and present live side by side, with guided tours of traditional silk weaving workshops and shops run by young creative designers who keep the spirit of the canuts alive.

Important mechanisms for protecting the Alpine textile heritage are also the national intangible cultural heritage lists which serve as platforms for identifying and protecting cultural practices and traditions that are considered significant in a given country. In the EUSALP region, 38 units of textile practices were inscribed in national or regional intangible cultural heritage lists by May 2024.

Six elements are connected with agriculture and sheep breeding, mostly with mountain pasturing that has great economic importance in Alpine regions: in Slovenia "Mountain pasturing and dairying"; in Italy "Casinetto

pasture of Cigoleto", "Stabil Fiorito mountain pasture in Val Grigna" and "The farming of scheep and goats in Fraciscio"; in Germany "Allgaeu's High Alpine Agriculture in Bad Hindelang"; in Austria "Transhumance – sheep drive in the Ötztal Alps".

Three inscriptions are more directly connected with wool production and wool processing: two in Italy ("Wool carding and spinning in Fraciscio" and »Wool preparation in Armeno"), and one in France ("Breeding and wool production in Briançonnais region").

There is no entry dedicated to preserving knowledge about the cultivation and processing of flax. But there is an entry in the French register of ICH connected to hemp, that is "The know-how of the Briançonnais: the cultivation of textile hemp".

The lists contain five entries dedicated to weaving: "Weaving wool in Forno" in Italy, "Weaving in Valposchiavo" in Switzerland and "Handweaving" in Germany. In additiona, two inscriptions are in the ICH national list in Switzerland, which are dedicated to silk weaving and the silk industry: "Silk ribbon and ribbon weaving" and "Zurich's silk industry".

In addition to the entry on the UNESCO list, there are two more entries related to blueprint or indigo hand block printing in the Austrian Register and one dedicated to dyeing with vegetable dyes: in Austria, "Indigo hand block printing in the Mühlviertel region" and "Blueprint - resist block printing and indigo dyeing in Burgenland", and in Italy Dyeing of wool in Forno.

Most of the entries are devoted to decorative techniques, namely lace-making and embroidery. Thus, in addition to the Making Slovene bobbin lace entry on the UNESCO list, there are six more entries on the national lists of intangible cultural heritage dedicated to producing different types of lace. Lace-making is the only textile craft that was selected for national registers of intangible cultural heritage in all Alpine countries: "Making Idrija bobbin lace", "Making Slovene bobbin lace" (Slovenia), "Cantù-style lace" (Italy), "Bobbin lacemaking in Salzburg" (Austria), "The bobbin lace of Puy-en-Velay" (France), "Bobbin-Lace Making in the Upper Palatine Forest" (Germany), and "Neuchâtel lace" (Switzerland).

Embroidery, another decorative technique, is also strongly represented in registers of intangible cultural heritage, namely as many as five cases in four countries: "Quill embroidery (restoration, further development, and use" (Austria), "Machine embroidery in St. Gallen" (Switzerland), "Boutis, or Marseille embroidery" (France), "Embroidery following a stencil" and "Counted thread embroidery" (Slovenia).

Referring to the skills of making clothes, especially traditional clothes, there are six entries in the registers; the most registered units are in Austria, where the skills of making various parts of regional costumes are listed, as well as the knowledge of tailoring men's evening dresses: "The lake Constance radhaube in lamé lace", "Making and wearing of the Linz 'goldhaube'", "Garnierspenzer, hat, and steppmieder", "Production of Bregenz forest juppen and wearing of women's traditional dress", "Production and use of Montafon traditional costume" and also "The custom tailoring of men's full evening dress". Making of traditional costumes is also inscribed in Slovenia ("Making traditional costumes") and in Italy ("Making costumes").

The significance of intangible cultural heritage lists, such as national ones or those maintained by UNESCO, is complex and encompasses cultural, social, economic and educational aspects. These lists play a critical role in preserving and promoting the diverse cultural practices, expressions, knowledge and skills that makeup humanity's intangible heritage. Textile crafts are often deeply embedded in the cultural identity of communities. Including these crafts in the listings emphasises the cultural significance of these practises and helps preserve the unique cultural heritage of different regions.

It encourages communities to preserve their heritage. This commitment fosters a sense of pride and ownership as community members work together to preserve their traditional crafts.

Recognised textile crafts can attract tourism, leading to increased economic activity. Tourists often look for authentic, handmade textile products, which generate income for the artisans and contribute to the local economy. It can also open up new market opportunities for traditional textile products. The demand for high-quality, unique and culturally significant textiles can provide a sustainable livelihood for craftspeople.

Recognising textile craftsmanship encourages research into traditional methods and materials. This research can lead to innovations that combine traditional techniques with modern designs, ensuring the craftt's relevance and sustainability.

By valuing these traditions, we ensure that the rich heritage of textile craftsmanship is honoured and preserved for future generations.

SOURCES:

Maa, T, and Mengjun, P. 2018 "Research on the Importance of Textile Intangible Cultural Heritage Protection." https://www.researchgate.net/profile/Elena-Savicheva/publication/331430981_The_Middle_Eastern_Studies_at_Russian_Universities_Case_of_RUDN_University/links/5c78e32a458515831f783389/The-Middle-Eastern-Studies-at-Russian-Universities-Case-of-RUDN-University.pdf#page=27

https://en.lyon-france.com/discover-lyon/heritage-unesco/remarkable-sites-and-monuments/lyon-unesco-world-heritage-site

https://ich.unesco.org/en/RL/bobbin-lacemaking-in-slovenia-01378)

https://ich.unesco.org/en/RL/blaudruck-modrotisk-kkfests-modrotlaresist-block-printing-and-indigo-dyeing-in-europe-01365)

https://whc.unesco.org/en/list/730/

https://whc.unesco.org/en/list/872/

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5.1. LACE-MAKING

Lace-making in the Alpine regions has a rich history and is an important craft that has been practised for centuries. It is also the only craft that has been included in all national lists of intangible cultural heritage in all Alpine countries.

Over the centuries, the Alpine regions have developed their unique lace-making techniques, each with their own characteristics and styles. Handcrafted lace consists of intricate patterns and delicate stitches created using fine threads. Some well-known lace-making techniques in the Alpine regions include bobbin lace, needle lace and tatting.

Different alpine regions have specialised in lace-making and each has its own style. For example, it is renowned for its bobbin lace, particularly in the town of Idrija (Slovenia), where lace originated in the 17th century; but also in the Cantù area (Italy) for centuries.

Lace-making in the Alpine regions is, first and foremost, a craft that requires skill, precision and attention to detail. Lace-makers use special tools such as bobbins, needles and templates to create sophisticated lace patterns. The threads are carefully worked to create delicate patterns and structures.

Lace-making in the Alpine regions is of great cultural and historical importance. Many efforts are being made to preserve this heritage and promote it through exhibitions, museums, festivals and craft events. These initiatives aim to showcase the beauty and craftsmanship of alpine lace and raise awareness of its cultural value.

Lace-making in the Alpine regions is not only a craft, but also a valued part of cultural heritage, as evidenced by the inclusion of Slovenian bobbin lace in UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

The intricate and delicate lace designs produced in these regions are admired for their beauty and are a testament to the craftsmanship and creativity of lace-makers throughout history.

Making of bobbin lace. Source: FB Festival idrijske čipke

BOBBIN LACE-MAKING IN SLOVENIA

KATARINA ŠRIMPF VENDRAMIN

HISTORY

The art of lace-making, in which threads wound on bobbins are interwoven, was brought to the Idrija region (present-day Slovenia) by the wives of miners who came from various parts of Europe to work in the Idrija mercury mine. This lace-making technique has existed in Idrija since at least the second half of the 17th century. The first written record of Idrija lace dates back to 1696 in a document referring to travelling peddlers who brought food to the town but also secretly took cinnabar ore and mercury.

Originally, lace from Idrija was made of linen yarn and was relatively coarse. It was primarily intended for the local market, including the clergy and the wealthier rural population. However, when women lost their jobs in the mines in the mid-17th century due to technological advances, they turned to domestic crafts and lace-making. They sold their products to travelling peddlers and merchants who brought food to Idrija, but could not compete in foreign markets because of their lower quality.

In the 1870s, Idrija lace acquired its characteristic shape, known as *široki ris* (wide bobbin laces), which required seven pairs of bobbins. After that, meter laces (continuous laces) began replacing laces with closed shapes such as circles, ovals, squares, and triangles, used as decorative elements on women's and children's clothing.

In 1860, Štefan and Karolina Lapajne opened the first lace store in Idrija. They were the only buyers and distributors of lace until 1875 when their nephew Franc Lapajne established a lace company and store. He successfully exported laces all over Europe and America. The laces were already marketed under the brand name "Idrija Lace," using catalogues of lace patterns.

As the demand for professional training increased due to sales in the more demanding markets of Western and Northern Europe, the Vienna Ministry of Commerce opened a lace school in 1876 at the suggestion of a local woman named Ivana Fabjančič. The school employed a lace-maker who designed each new pattern and determined the price of the finished product based on the time needed to make it and the amount of yarn used. At the end of the 19th century, however, the lace-makers' earnings were still low. With a full day's earnings, they could afford at most 2 kg of bread or 1 kg of meat.

In the late 19th century and the years before the First World War, the production of Idrija lace peaked. It is estimated that more than 2,000 people, including women, girls, children, and some men, were engaged in lace production in the town and its surroundings. The demand for lace in the German and American markets was so high that

Family by making bobbin lace, Mestni muzej Idrija. Source: UNESCO ICH

merchants bought up even lower-quality lace products. In addition, children earned money for essential footwear and clothing by making lace, while young girls could buy a trousseau from their earnings.

During that time, lace-making spread to a broader area through courses, schools, and the teaching of lace-makers from Idrija. However, the tradition remained most vital in northwestern Slovenia, especially around Idrija, Cerkno, and Škofja Loka.

The market changed after the First World War and the annexation of the western and southwestern parts of the region to Italy. The lace-makers from Idrija could only compete if they produced larger quantities of lace. This led to the emergence of the "ozki ris" (narrow bobbin lace), a technique known in the Italian regions, which allowed simpler lace production with five pairs of bobbins. Idrija lace thus became more affordable and accessible to a broader segment of the population.

After World War II, the sale of lace continued to decline, and the professional bobbin lace school in Idrija was also closed.

Although Idrija is considered the cradle and centre of lace-making in Slovenia, lace-making was also practised in Ljubljana as early as the 17th century. At the end of the first half of the 18th century, a lace-making manufactory operated in the city that employed 45 lace-makers. Lace-making was widespread among the lower social classes. In 1763, the first bobbin lace school in Slovenia was founded in Ljubljana, where about 200 students were trained within a little more than four years.

A preserved list from 1789 in the Ljubljana suburb of Trnovo mentions 72 lace-makers. In 1888, a state women's vocational school was established in the town, where artistic embroidery, lace-making and later bobbin lace were taught. In the 20th century, organized lace-making was carried out in the above-mentioned institutions.

Due to the economic importance that bobbin lace-making had in the past, it has survived to the present time, when it is mainly a leisure activity for women, retired women, children, young people, and, more rarely, men who participate in it mainly as manufacturers of lace-making tools.

TECHNIQUE

Bobbin lace-making in Slovenia is a handicraft skill that involves crossing and twisting threads wound on special wooden sticks called bobbins. The bobbin lace-makers use locally recognizable patterns with local names, which they make in ribbons or finished forms.

The lace-makers create their lace using lace patterns (the shape of the lace is drawn on paper with a pencil), which they place on a cylinder cushion in a wicker basket or a wooden base. They make lace using bobbins around which the thread is wound. Other tools include pins, a crochet hook, scissors, and a tool for winding the thread onto the bobbins. Lace is usually made from linen or cotton yarn, but silk, wool, artificial materials, metal threads, and ropes are also used nowadays. Bobbin lace can be classified by type and typology. Based on the method or type of construction, bobbin lace is divided into "stitched" and "tatted" lace.

Stitched lace is further categorized into several groups. Most of the older stitched lace pieces in Idrija museum, which has the largest collection of bobbin laces in Slovenia, can be classified as *cluny* and *torchon* lace. In contrast, rare needle lace belongs to the point ground lace group, which uses a tulle mesh as its foundation. Unfortunately, there are no preserved local names, particularly for cluny and torchon lace, which were historically made in Idrija. Stitched lace is further categorized into several groups.

Old patterns, new laces from the Ljubljana Source: Mestni muzej Ljubljana

In contrast, rare needle lace belongs to the point ground lace group, which uses a tulle mesh as its foundation. Unfortunately, there are no preserved local names, particularly for cluny and torchon lace, which were historically made in Idrija.

Based on typology, tatted lace is divided into tape lace and lace made in sections. Idrija lace undoubtedly falls under the category of tape lace, which gained recognition in the broader European context from the 1870s onwards. For the production of laces in the most representative technique, *široki ris,* usually seven pairs of bobbins are used. A

Torhon type bobbin lace. Source: Muzej Idrija

"Široki ris" tyle bobbin lace called srčovka. Source: Muzej Idrija

distinctive feature of this technique is the characteristic patterns, which have often preserved traditional names (e.g., *križavke, srčkovke, pogačke, močeradovke*). On the other hand, the narrow lace-making technique called *ozki ris* requires only five pairs of bobbins and results in a narrower band or ribbon-like pattern.

Foreign influences, fashion trends, and the skills and tastes of local lace-makers and pattern designers have influenced stylistic and technological changes in the production of bobbin lace in Idrija and throughout Slovenia. The knowledge of bobbin lace-making has been passed down through the centuries as an oral tradition from generation to generation.

BOBBIN LACE-MAKING IN SLOVENIA TODAY

Since 2018, bobbin lace-making in Slovenia has been inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity, as Slovenia is one of the vital centres of bobbin lace-making in Europe.

In Slovenia, bobbin lace-making is practised by many people – individuals, members of associations, sections and groups, communities, and students in schools. Today there are about 120 bobbin lace-making societies, sections and groups in Slovenia, including trained bobbin lace-makers and those still learning. The bearers are primarily women, and the knowledge and skills related to this craft are most often passed on from grandmothers to grandchildren.

Idrija is considered the cradle of Slovenian bobbin lace-making, so there is still a working bobbin lace-making school, but one with a 100-year-old tradition can be also found in nearby Žiri. In addition, in Idrija, there is the annual Idrija Lace Festival in June.

In the past, bobbin lace-making was an essential economic activity. Nowadays, it is a popular pastime for older people, children, and young people. Lace is still used to decorate clothing and fashion accessories, church and home textiles, and prestigious spaces. Still, bobbin lace also inspires artistic creations in contemporary fine art, design, architecture, and even culinary design. Today, this technique continues to develop new forms of expression. Thus, we can find Idrija lace motifs not only on various garments and home textiles but also on objects such as chocolate, ceramics, candles, and much more. The traditional motifs of Idrija bobbin lace have expanded beyond the lace itself and have been incorporated into a wide range of products, proving the versatility and adaptability of this

Students in one of lace-making schools. Source: Kamra

intricate craft. Recently, progress has been made in developing contemporary Idrija lace and the author's bobbin lace in collaboration with the Faculty of Natural Sciences and Engineering at the College of Ljubljana. This collaboration has led to advances in the field and has produced new and innovative approaches to Idrija lace that incorporate modern design elements and unique artistic expressions. Furthermore, the fusion of traditional techniques with contemporary influences has contributed to the development and revival of Idrija lace as a vibrant and dynamic craft form.

In 2014, the Tourism Institute of Idrija, together with Hišeriše arhitektura designed and implemented the decoration of Idrija, weaving lace over the asphalt and concrete. Source: FB Festival idrijske čipke

Lace screen, work of Manca Ahlin. Source: UNESCO ICH

SOURCES:

Mirjam Gnezda (et. al.) 2006. *Idrijska čipka in njeno mesto med evropskimi čipkami*. Idrija : Občina.

Ivana Leskovec (et al.) 2012. *Idrijska čipka : z nitjo pisana zgodovina*. Idrija : Mestni muzej.

Register nesnoven dediščine: http://www.nesnovnadediscina.si/sl/register/klekljanjeslovenske-cipke

http://www.nesnovnadediscina.si/sl/register/klekljanjeidrijske-cipke

https://ich.unesco.org/en/RL/bobbin-lacemaking-inslovenia-01378

https://www.muzej-idrija-cerkno.si/zbirka/cipkarska-zbirka/klekljane-cipke/

https://mgml.si/sl/mestni-muzej/razstave/536/stari-vzorcinove-cipke/Idrijska čipka:

https://www.visit-idrija.si/en/experience/2019092610280579/idrija-lace

https://slovenia.si/art-and-cultural-heritage/slovenianlace-weaving-ties-between-people/

http://www.nesnovnadediscina.si/en/register-ofintangible-cultural-heritage/making-slovene-bobbin-lace

https://ich.unesco.org/en/RL/bobbin-lacemaking-inslovenia-01378

https://mgml.si/en/city-museum/exhibitions/536/oldpatterns-new-laces/

FIlms

Bobbin lacemaking in Slovenia: https://www.youtube.com/watch?v=NjYtxBLocTU&t=2s

CANTÙ-STYLE LACE

LISE ALINE BEGALLI

HISTORY

Bobbin lace-making has been a popular activity in the Cantù area for centuries. Many places in the Como district (Cantù, Carimate, Novedrate, Figino, Mariano, Cucciago and others) were important centres of lace-making. *Pizzo di Cantù* – Cantù-style lace - takes its name from the place where it was usually sold, but actually describes a particular method of lace-making.

The practice of bobbin lace-making is ancient, although it is not possible to give a specific date for its introduction.

In the early years of the 19th century, around 700 women worked on lace of various heights and sizes in Cantù. It was not until the late 19th century that production became more localised. Between 1880 and 1900, two events contributed to the development of lace -making in Cantù: the

Canturino lace. Lace threads glued onto notebook page. E. Davanzo. Cantù, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Canturino lace. Notebook with instructions for making lace. V. Caetano, Cadorago, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

opening of the Scuola d'Arte Applicata all'Industria in 1882 with two departments, one dedicated to furniture making and the other to lace-making. These two branches of craftsmanship were to be strengthened. Design, conceived as a fundamental moment between planning and production, was the subject of a course in both sections.

In 1900, the Manifatture Riunite Merletti was founded. The organisation of the large *Manifattura*, called *il Butegun* by the workers, perfected the traditional division of work. The central phase of the work is still carried out at home by lace-makers, who receive the

Semi-finished bobbins, S. Pino, Mariano Comense, 2011
Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

patterns necessary for the repertoire of the most important models.

TECHNIQUE

Cantù-style lace - *ul pizz* – is lace-made by braiding and twisting threads of cotton, linen and silk wound on bobbins - *i oss*. The lace is created on a lace pillow - *ul cussin* - on a stand - *ul pundin* – and held inclined with axes of wood -*la tapparèla*.

During the work, the fabric is held in place with pins – *gugitt* – and occasionally supported with a crochet *hook* - *ul cruscè* - and scissors. The bobbin lace is made according to a design on a piece of pattern or a stitch - *la cartina*. Several professionals are involved in the production of the lace: the designer, who creates the graphic representation following the technical-stylistic process of lace design; the checker, who pricks the pattern; and the lace-maker, who works the bobbins to produce the lace.

Cantù-style lace is a combination of techniques: Maltese lace, old Milano Point, Venetian Gros Point – also known as classic Cantù lace, Astrakan Point, Rosalin Point, Old Point.

The Cantù style is characterised by the presence of specific stitches and elaborate decorations executed with great skill. Thanks to the high quality of the lace, it attracts the luxury market of craftsmanship.

There is also a repertoire of stylistically innovative art lace that became popular in the 1930s. It is the result of experiments, collaborations and contributions by important architects and artists. Attention to the project aspects of lace-making is a real necessity in this community.

In recent years, the collaboration between lace-making and design has increased more and more.

The secrets of lace-making have always been passed on at home by the women in the family or by teachers. The teachers, who are documented in the 19th and 20th centuries, but were certainly also active in previous centuries, offered a kind of school-laboratory in their homes, where they taught young people for a fee.

Today, lace-making is mainly taught in courses organised by schools and associations that were founded in the 1980s.

CANTÚ-STYLE LACE TODAY

Bobbin, lace and bobbins. S. Pino, Cantù, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Interest in Cantù-style lace, which had gradually declined after the Second World War, has been revived since the 1980s. In particular, the opening of numerous lace-making schools in the Cantù area emphasises the need for independent artistic research.

The courses provided are almost all organised by various associations in the communes of Cantù and the surrounding area and are led by master lace-makers who pass on and keep alive centuries-old knowledge. As these are non-profit activities, the women work in their free time according to the rules and timetable of the market. The non-professional production is mainly aimed at preserving

Lace-making. V. Caetano, Capiago Intimiano, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Detail of the making of a lace. M. Pandolfi, Cantù, 2011 Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

the technique and style. In the schools, the old traditions of Cantù are revived and taught and there is a tendency to use old patterns.

Today, the companies in this area sell lace that is used for textiles for the kitchen, bedroom and bathroom as well as for home decoration. The production is destined for the southern Italian market, where the custom of the dowry is still alive, or for abroad. In recent years, the production of lace for sacred purposes has declined, whereas it used to be very popular. When it comes to clothing, the niche market today is that of haute couture. Economically, Cantù-style lace contributes to the trade and most of the lace is imported. The local production of commissioned work is entrusted to private craftsmen and a few schools. Also, the designers are still in business, creating designs and patterns to be sold in lace shops or creating designs to be produced abroad.

In recent years, there have been increasing collaborations between lace-making and design. Designers, museums, art galleries and interior designers are enriching the exhibitions linked to the creativity of lace-makers.

Today's lace-makers have developed professionally: They travel, speak foreign languages and surf the internet. They take part in exhibitions throughout Italy and abroad and in competitions, including international ones. They take part in lace-making courses in Italy to learn new techniques, improve their aesthetics and expand their personal knowledge. As some recent initiatives show, there is also a strong interest among the younger generations. Various promotional campaigns and protective measures have been taken to preserve this traditional art: The Committee for the Promotion of Lace-making has organised the International Cantù-style Lace-making Exhibition every two years since it was founded in 1992. At the same time as the exhibition, it publishes historical and technical catalogues on the bobbin lace-making tradition. The Committee is an important point of reference for finding out about the history,

Lace-maker works on the cushion. E. Davanzo, Cantù, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

themes, trends, materials and techniques of bobbin lace-making in the past and today.

The Comitato Novedratese Promozione del Pizzo organises the International Exhibition under the patronage of Comune di Novedrate. The exhibition began in 1977 as an amateur exhibition. Over the years, it has developed into an important international event attended by experts and scientists from all over the world.

Il Museo Didattico della Seta di Como has been promoting the "Concorso Europeo per un merletto a fuselli" since 2005. The museum's aim is to recover historical artefacts (bobbin lace), techniques, materials (silk) and traditional art and to promote the dissemination of this heritage to the public. The competition involves the whole community, schools, associations, other educational organisations and museums, craftsmen and designers as well as passionate lace-makers from the EU and Switzerland. The works are evaluated by an international jury made up of experts from the fields of art, design and lace-making.

Certain design trends raise the question of the possibilities of intervening in the processes of reactivating, reusing and updating the sedimented craft knowledge in the territories.

The project Design al tombolo (bobbin lace) was created as a project of the Consorzio POLIdesign for E.CH.I. Italian-Swiss Ethnographies for the valorisation of intangible heritage, attempts to test the scope of the interdisciplinary model of design and the humanities through encounters with anthropology. This encounter proved capable of developing valorisation paths dedicated to a specific expression of Lombard textile craftsmanship through a series of phases that led to a common meta-design practice through the collection of ethnographic documentation.

The project Design al tombolo is a research/action in which the creativity of a group of designers meets the typical knowledge of a community of designers and lace-makers from Cantù who have processes, repertoires and interpretation techniques for bobbin lace. It is not just a study of the artisanal culture of a territory, but rather an "interweaving" between the immateriality of knowledge and the materiality of the artefact. During six PopUp Atéliers (spontaneous creative spaces lasting around 100 days), the designers used mood boards to encourage lace-makers' communities to create new designs, experiment with compositional and chromatic logic or the use of unusual yarns, often reinterpreting traditional repertoires. The result is a collection of six "cross-border" bags that are experimental both in terms of the forms, functions and materials of the object "bag" and in terms of the activation of participatory design processes for the creation of the lace. The collaboration between designers and the Cantù lace community aimed to explore contemporary strategies for recovering the traditional repertoire while innovating the design process.

The institutions and associations of the Cantù area organise numerous exhibitions on lace-making in the Cantù style. The schools and lace-making associations organise courses, workshops and exhibitions in the Cantù area.

This ancient artisan technique shows a continuing vitality, even among the younger generations. The artisanal knowledge linked to lace-making can rightly be considered as knowledge to be passed on, as an art to be rediscovered and re-evaluated in order to be promoted and appreciated by the citizens of the world.

Cardboards with lace designs kept in a cupboard. F. Messina, Cantù, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Cantù-style lace-making is a candidate for Unesco cultural heritage. The municipalities of Cantù and Novedrate, the Comitato per la Promozione del Merletto di Cantù, the Comitato novedratese promozione del pizzo, organisations and associations for the promotion of Cantù and Novedrate-style lace-making and institutions such as the Museo della Seta di Como support the candidacy.

Lace-makers with lace. M. Pandolfi, Novedrate, 2011. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

SOURCES:

Associazione novedratese per la Promozione del Pizzo. https://artedelpizzo.it/associazione-novedratese-per-la-promozione-del-pizzo/

Bianchi, C., 1999. Montorfano Mariangela Pizzo di Cantu: il merletto a fuselli nell'Alta Lombardia. Museo didattico della Seta; Enaip Lombardia.

Comitato per la Promozione del Merletto: https://www.merletti.it/index.php?lang=it

Cooperativa Produzione Merletti: https://www.aess.regione.lombardia.it/ricerca/ricerca_src/scheda_aut.php?idk_id=AUT-FAB01-0000054208&sigla=aess_view

Design al tombolo. Progetto di un intreccio: https://aess.regione.lombardia.it/portfolio/design-al-tombolo/

Esposizioni temporanee del progetto Design al Tombolo | AESS (regione.lombardia.it): https://aess.regione.lombardia.it/portfolio/installazioni-temporanee-per-il-progetto-design-al-tombolo/

Intangible Search: Merletto del Canturino: https://www.intangiblesearch.eu/search/show_ich_detail.php?db_name=intangible_search&lingua=inglese&idk=ICH-FAB01-0000000192

L'arte del merletto in dialogo con ALMA MATER | AESS (regione.lombardia.it): https://aess.regione.lombardia.it/larte-del-merletto-in-dialogo-con-alma-mater/

Manifattura Merletti Giorgio Galbiati & C.: https://www.aess.regione.lombardia.it/ricerca/ricerca_src/scheda_aut.php?idk_id=AUT-FAB01-0000054213&sigla=aess_view

Museo Didattico delle Seta – Como: https://museosetacomo.com/

Rizzini, M. L., 1997. Tra devozione e artigianato. I merletti nell'addobbo liturgico della Pieve di Cantù. 3ª Biennale Internazionale del Merletto.

KATARINA ŠRIMPF
VENDRAMIN

5.2. HOUSE TEXTILE

Traditional household textiles in the Alpine regions, such as Switzerland, Austria, Germany, Italy, Slovenia and France, often reflect the rich cultural heritage and local craftsmanship of these areas.

Wool was a common material for textiles due to its warmth and availability from local sheep. It was used to make blankets, carpets and various items of clothing. Thick woollen blankets and carpets were common and provided warmth in the cold Alpine winters. In some regions, linen and cotton were also used for textiles, especially for lighter items such as tablecloths and curtains. Textiles made of linen or cotton, decorated with elaborate embroidery, were used to decorate tables on festive occasions. Decorative textiles were used for windows to add a touch of warmth to houses in the Alps.

Elaborate embroidery was a key feature of Alpine textiles. The traditional patterns often included geometric shapes, floral motifs and regional symbols. The embroidery was done by hand, demonstrating the skill and craftsmanship of local craftsmen and women. Many textiles were traditionally hand-woven on looms by skilful artisans. This made it possible to use locally sourced materials and to personalise the designs, like by Coperta Poschiavina, blanket costumized for each family in Poschiavo. The art of hand embroidery and hand weaving is still a living tradition, with artisans adopting traditional patterns and motifs while introducing new designs.

Each Alpine region has its own unique textile traditions, reflecting local culture, history and available resources. For example, Tyrolean textiles in Austria may differ from those in the Italian Dolomites. A particular style has emerged in the German-speaking region and its surroundings, which also influences home textiles. Heimatstil is a German term used in connection with architecture and design. Its literal translation is homeland-style. Its aesthetic emphasises the use of authentic, local materials and building techniques as well as the preservation of regional craftsmanship and design.

In the Alpine regions, the traditions of making home textiles live on. Craftsmen presere traditional techniques and adapt them to contemporary tastes, such as by Pezzoto from Valtelina or kitchen and home textiles handwoven in Poschiavo.

THE TRADITIONAL PEZZOTTO FROM VALTELLINA

LISE ALINE BEGALLI

HISTORY

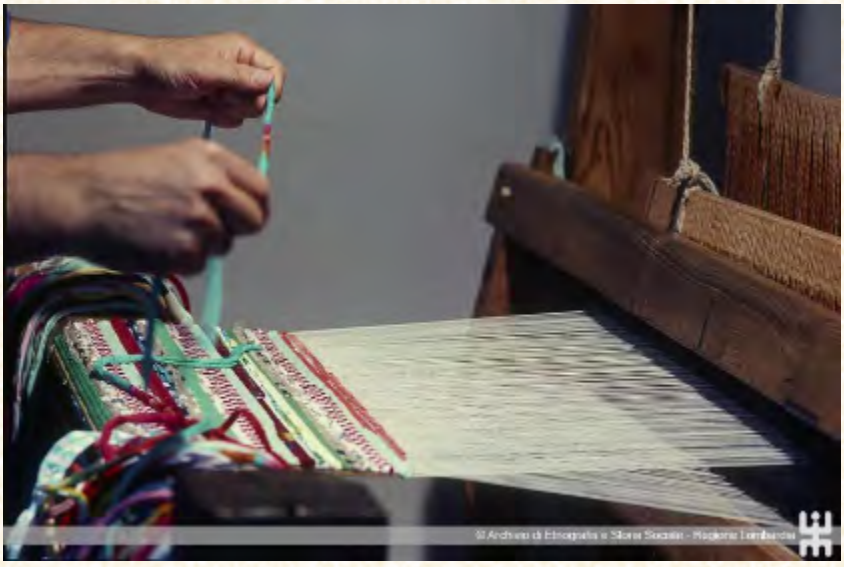
The traditional Pezzotto from Valtellina is a rustic rug in bright colours, with stripes or geometric patterns, in various sizes, which was produced from the 1940s–1950s onwards.

They were made with a warp of sturdy hemp threads and a weft of rags or discarded clothing. The origin of the traditional Pezzotto perhaps lies in the mountain habits of not wasting anything, not throwing anything away, because everything could still be useful one day.

At the beginning of the 1900s and during the war years, every house in Arigna had a wooden loom for weaving. Sources report 40 looms in Castello dell'Acqua and 138 in Ponte in Valtellina. Weaving was an important source of income that supplemented the yields of poor and border agriculture.

Flax and hemp are cultivated on the side of the Rhaetian Alps, while spinning and weaving are mainly carried out by women on the side of the Orobic Alps. The traditional know-how was passed on from mother to daughter during the long winter period. Production was not only focused on carpets but also on hemp sheets and blankets, agricultural cloths and blankets for animals. The perlòrsc or pelòtt (forerunner of the Pezzotto) was a robust blanket used for threshing rye, drying grain, covering hay, for sick cattle in the mountain pastures and, in some cases, as a blanket for people. They were also used as a cover for the *colec* (shepherd's hut on the mountain pastures), which served as a roof. *Perlòrsc* was made by weaving strips of rags, which were also made of hemp, linen, cotton or thick threads, with a hemp warp.

Detail of a traditional Pezzotto. L. Losito, 2023. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia



Detail of a traditional Pezzotto. L. Losito, 2023. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

The fabric was never homogeneous; fragments of buttons, buttonholes or other details can often be recognised to remind us of the origin of the rags.

The Perlòrsc was often the subject of bartering between the communities of the two valleys: flour, vegetables and cheese were received in exchange for the blanket woven on the side less exposed to the sun (the orobic side).

Traditional Pezzotto weaving continued to flourish, albeit subliminally, until the mid-1980s, a time when production

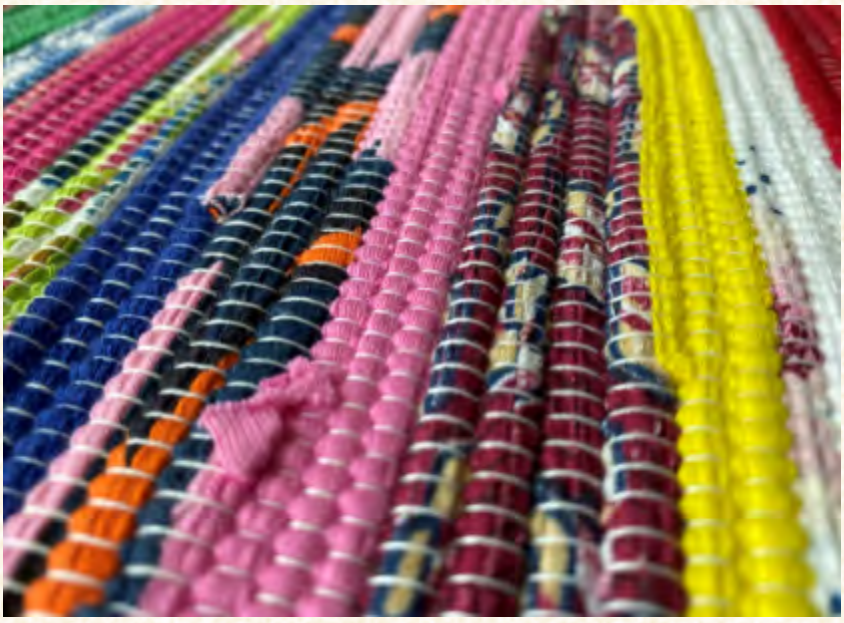
gradually declined, partly due to the new taxation that banned piecework.

In Val d'Arigna, Silvio Toppi's workshop, and Cristina Toppi's workshop in Ponte, Valtellina, the artisan practice lives on. In Morbegno, thanks to the work of the Ruffoni family in their laboratory, the traditional pezzotto has been analysed in terms of design, formats, and materials.

TECHNIQUE

The pezzotto technique requires a great deal of physical energy but does not allow for a wide variety of patterns and lines. The carpets are still produced today using wooden looms in order to maintain the old tradition. The most characteristic patterns are the following:

- *Rigatino* (small line), which has no specific pattern but whose construction includes a range of colours;



Detail of a traditional Pezzotto. L. Losito, 2023. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

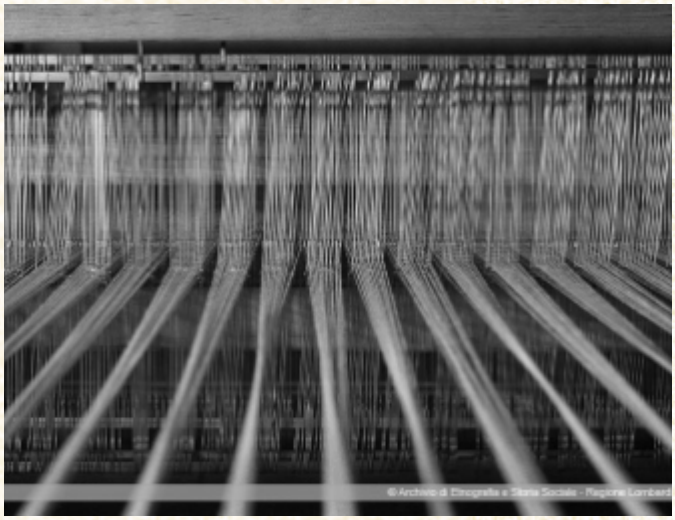
- triangular flames in different colours that stand out against a neutral background;
- pyramid and fishtail (newer).

In addition to these decorations, we often find geometric patterns consisting of an interweaving of triangles and squares. As testified by the weavers, there are no designs or patterns that could be consulted. The classification is not codified, but an unwritten convention to describe the most common and most requested designs.

It was only after the Second World War that the production of traditional Pezzotti was managed in the S. Toppi laboratory on behalf of a company that marketed them throughout Lombardy and in Milan in particular (La Rinascente shops).

Detail of the carpet displayed in front of the piece shop. B. Chiarini, Ponte in Valtellina, 1996. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

A catalogue was drawn up to enable the weaving of certain repertoires. It contained drawings and information on the colours and number of spools. The designs were delivered to the weavers together with the scraps for weaving, who made them according to the standard dimensions suitable for processing on traditional looms: 120x180 cm – 150x200 cm – 170x240 cm – 200x300 cm. The production was characterised either by the thousand-line design or by real drawings. In order to adapt the design to the standard size, the weaver often already had the proportions in her head; she did not make new designs but worked directly on the loom. Production was discontinued at the end of the 1970s and the catalogue is the only example of a form of notation/sampling of the repertoire.

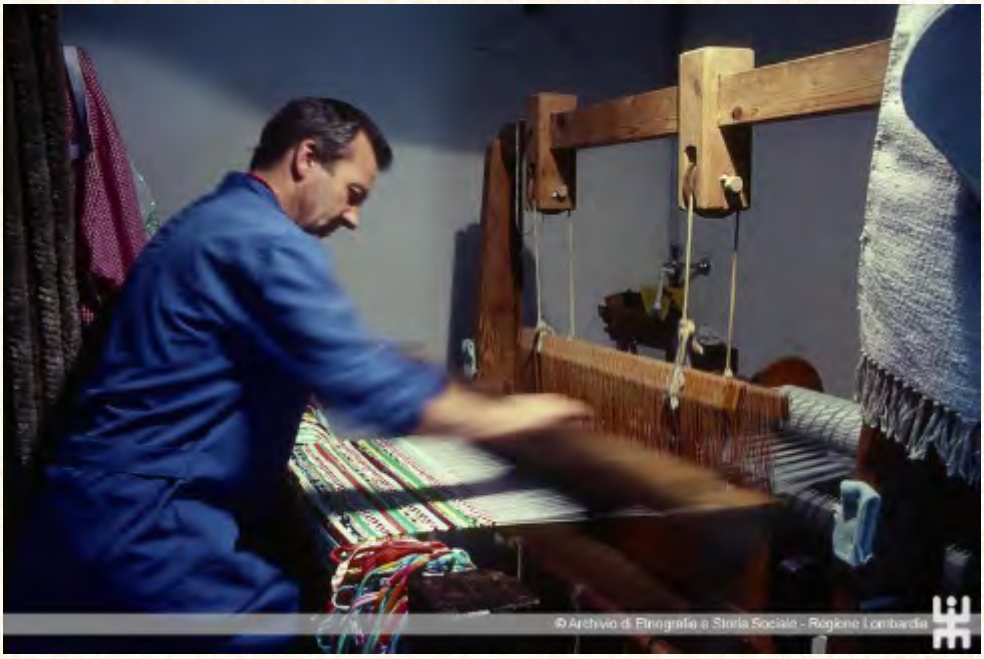


The loom strings. B. Chiarini, Ponte in Valtellina, 1996. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

The chromatic quality of the object is evident not only in traditional repertoires, which mainly involve the use of grey, black, light blue and pastel shades but above all in the real availability of certain colours/fibres, which often force the craftsman to rethink, recode and decode combinations and contrasts.

In the Valtellina textile laboratories, colour (together with fibre) also becomes an organising and taxonomic element for the management of waste pieces. Despite the limits imposed by the logic of recycling, it is possible to identify chromatic solutions in some small pieces that are able to create connections, references and assonances with the colours and graphics of the Valtellina landscape. An ability that seems to affirm the need to express belonging to a place, to a community, to a shared aesthetic (and chromatic) memory, beyond all fashion constraints. This type of textile product (with a high cultural gradient) is understood here as an expressive, significant carrier of local culture and is, therefore, interpretable and translatable. In this context, the issue of translation is linked to the vocation of design to deal with codes and to integrate communicative elements into the product system. Translation is an action that establishes a relationship that defines a passage. More than ever, this aspect is important when we talk about design and artisanal practises, about the valorisation of tradition through innovative languages. Translation should, therefore, be seen as a process of creation through which new representative objects are "invented" that find their own autonomy and a new cultural value.

The woman at the loom in Toppi Stelio's artisan workshop. B. Chiarini, Ponte in Valtellina, 1996. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia



Man working on carpet. B. Chiarini, Ponte in Valtellina, 1996. Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

THE TRADITIONAL PEZZOTTO FROM VALTELLINA TODAY

Today, in Val d'Arigna, traditional Pezzotti continue to be produced mainly according to traditional cuts, styles and geometries, while in Morbegno the Pezzotto has become the subject of study in terms of design, formats and materials thanks to the work carried out in the Ruffoni family laboratory.

The colours and patterns of the fabrics have changed considerably in recent decades:

Work tools. B. Chiarini, Ponte in Valtellina, 1996 Source: ©Archivio di Etnografia e Storia Sociale – D.G. Cultura – Regione Lombardia

Originally, only grey, black, light blue and pastel shades were used.

In the past, the decorative motifs were simple, and the classic diamonds were the most complex patterns. Today, due to market needs, the colours of the fabrics are more vivid, but try to respect the typical figures of the traditional Pezzotto, although with some complex patterns. Contemporary tastes are forcing a return to the "Rigatino" and to neutral tones that are better suited to current aesthetics.

Today, in the production of the traditional Pezzotto, the rags are replaced by cotton or silk shreds, and the choice of colours and design is becoming increasingly precise. Thus, the robust and rough fabric of the peasant tradition has become a decorative element of modern furnishings that are also used outside the Valtellina.

The Ruffoni family from Morbegno, who have been weaving carpets by hand since 1935, and Toppi/Bellini from Piateda are among the most important custodians of this artisanal knowledge.

Today, the products are of the highest quality. The yarns come from the best weaving mills in Biella, Prato and Brianza and the workmanship is extremely refined. Ancient techniques are used, but the results are more elegant.

The Punto Ponte Association has promoted, organised and managed the "Pezzotto of the Arigna Valley" project as proof of the importance of this product and to protect the knowledge to prevent the spread and consequent end of the identity heritage that the traditional Pezzotto represents.

Among the problematic aspects of protecting and valorising "identifying" products are those relating to business succession and the safeguarding of the knowledge and skills associated with the production of these particular products.

Several identity producers and artisans are of advanced age, and it is from here that the complex process of succession and generational change is generated.

The Ethnographic Museum of the peasant civilisation of Ponte in Valtellina, set up in the former Jesuit college, allows citizens and tourists to experience the habits and domestic uses of the past thanks to the tools and evidence of rural tradition.

SOURCES:

Guglielmetti;I. and R. Trocchianesi, 2017. Patrimoni tessili e color trend in contesti territoriali montani: il paesaggio cromatico nell'intreccio del pezzotto valtellinese. Available at: https://re.public.polimi.it/handle/11311/1044657

Il patrimonio tessile della Val d'Arigna: solo ricordi o risorsa comunitaria?: https://puntoponte.wordpress.com/2014/07/14/il-patrimonio-tessile-della-val-darigna-solo-ricordi-o-risorsa-comunitaria/

I Pezzotti della Valtellina: https://www.in-lombardia.it/en/node/52819

Museo Ponte: www.museoponte.it

Pezzotti della Valtellina: https://www.valtellina.it/pezzotti

Prodotti Valtellinesi: https://www.gustovaltellina.it/magazine/prodotti-valtellinesi/pezzotti-della-valtellina.html

Research report by Associazione Etno Project Intrecci di comunità, Un dialogo fra tradizione tessile e riuso creativo

TESSITURA IN VALPOSCHIAVO: WEAVING TRADITION AND CULTURE

DIEGO RINALLO

HISTORY

Founded in 1955, Tessitura Valposchiavo is located in the Canton of Graubünden in Switzerland. It is one of the last three artisanal weaving workshops in the country. Although Tessitura is primarily known today as a weaving workshop, its origins lie in an association dedicated to promoting the Italian language.

The founding of Tessitura was a strategic response to the significant emigration of young people from the Canton of Graubünden. Letizia Pedrussio-Gisep, the first teacher and administrator of Tessitura, revealed that the workshop was founded with the dual aim of providing employment for local women and encouraging them to stay in the region. The workshop aimed to teach the women to make textile products for personal use and as a source of income. The fundamental aim of Tessitura, according to Giovanni Ruatti in an interview from 2018, was to "reintroduce spinning in the valley and weaving in the homes of the valley while promoting a love of things made with one's own hands and an attachment to one's home and the land." This goal emphasises the workshop's commitment to empowering local women on how to weave and encouraging them to keep their roots in the valley.

Tessitura began his journey at the Casa Battaglia, which was equipped with four looms and a cooperative ethos. Although initially focused on training apprentices and local women, Tessitura quickly expanded its scope. The workshop began producing textiles for the local and national markets and quickly gained a reputation for quality. Within a few months, Tessitura's textiles, comparable to those of other regional workshops, were exhibited in Swiss cities such as Basel, Zurich, Geneva, Bern and Sankt Gallen. This success prompted other regional manufacturers to ask the authorities for assurances that Tessitura would not compete directly with their existing weaving workshops.

In the 1980s, Tessitura moved to the Palazzo de Bassus-Mengotti, symbolising its deeper integration into the historical and cultural

Tessitura Manufacturing. Source: Tessitura

Casa Tomé. Source: Museums

Exposition of typical clothes in Casa Tomé. Photo: Diego Rinallo

landscape of Poschiavo. This move not only reassured other textile industries in the region by showing them that Tessitura was not a direct competitor but also marked the workshops' commitment to preserving the local heritage. Alongside Tessitura, the Musei Valposchiavo was founded and is dedicated to the history of weaving techniques in the region. In 2002, the museum acquired Casa Tomé, a historically significant building dating back to 1350. The acquisition of Casa Tomé by the local museum and the presence of Tessitura in the Palazzo de Bassus-Mengotti collectively contribute to preserving and celebrating Poschiavo's rich heritage. Casa Tomé served as a window into the past, showcasing the different lifestyles of the valley's inhabitants, from wealthy families to rural farmers.

Today, Tessitura is still housed in the Palazzo de Bassus-Mengotti. Its activities and the museum's presence in Casa Tomé play a central role in the cultural and historical narrative of Poschiavo. They represent different facets of the region's efforts to preserve and celebrate its heritage.

APPRECIATION AND CHALLENGES OVER TIME

TVP's products, known for their traditional *heimatstil* craftsmanship, have always been highly regarded for their quality. Ms. Pedrussio-Gisep, the first teacher, financial administrator, and head of production until 2000, fondly remembers clients' admiration for these products. However, she acknowledges that the clients perceive these artisanal creations as too expensive. This sentiment was expressed by local clients as *"Bello, ma costa troppo"* (beautiful, but too expensive) and foreign clients as *"Schön schön, aber teuer"* (beautiful, but expensive).

Overcoming the hurdle of justifying the products' prices has been a persistent issue for TVP since its foundation. TVP has faced various economic challenges throughout its existence, including rising personnel costs, competition from mass-produced goods, increasing raw material prices, and shifts in consumer behaviour. These factors have consistently threatened TVP's financial stability, and a particularly critical moment

Detail from the loom. Photo: Katarina Šrimpf Vendramin

occurred in 2012 when local news reported that Tessitura Valposchiavo was on the brink of collapse. This alarming news caused a local mobilisation effort, with people from the Canton of Graubünden coming together to support TVP's workshop.

In response to these challenges, strategies were implemented to reduce costs and improve production efficiency. After the resignation of its former director, a volunteer committee assumed management responsibilities, and a network of volunteers, along with an association dedicated to supporting TVP, was established to engage the public and manage sales.

THE TECHNIQUE

Tessitura Valposchiavo creates hand-woven products exclusively using natural fibres. These include commonly used materials such as cotton, linen, wool, and silk, along with the occasional use of hemp and nettle. The yarns, primarily sourced from high-quality Swiss producers, sometimes include materials from abroad, like merino wool from New Zealand, ensuring a blend of local and international quality.

Over the years, Tessitura Valposchiavo has maintained its focus on natural fibres and significantly evolved in style, design, and variety. The workshop has been dedicated to enhancing the quality of its products while incorporating modern designs, patterns, and colours. This commitment to innovation, driven by market demands, has been a central focus for the organisation's committees. An example of TVP's pursuit of innovation is the introduction of their new distinctive product: a deckchair. This deckchair uniquely combines a foldable wooden structure and fabric woven at the workshop. The wooden structure is crafted in a specialised workshop that employs people with disabilities.

Coperta poschiavina sold by Tessitura. Source: Tessitura

TESSITURA TODAY: LOOKING TOWARDS THE FUTURE

In the years following the COVID-19 pandemic, Valposchiavo experienced a surge in tourism, positively impacting TVP's sales. Despite this recent boost, securing a sustainable future for the workshop remains an ongoing effort.

TVP's recent slogans, *"Se nessuno ci fa il filo, non possiamo tessere"* (If no one threads us, we cannot weave) and *"Vogliamo volare nel futuro, non finire al museo"* (We want to fly into the future, not end up in a museum), reflect its aspirations and call for continued support. These slogans capture the enduring spirit of Tessitura Valposchiavo and its determination to preserve its legacy well into the future.

One of the primary challenges Tessitura Valposchiavo faces is communicating the value behind its products' pricing. The difficulty lies in conveying to clients the expertise and time invested in each handcrafted piece. By allowing customers to touch the products physically and sharing the stories behind their creations, Tessitura Valposchiavo helps clients appreciate the quality and understand the pricing.

The workshop's clientele mainly comprises individual buyers, though they have also supplied to hotels in the Engadin region. Tessitura offers personalised services, creating custom-made products based on individual client ideas. During these custom orders, the weavers maintain a close relationship with the clients, providing updates with pictures and videos from the start of production until the final product is ready.

A notable aspect of Tessitura Valposchiavo's product line is the 'Casa Tomé' collection, inspired by a linen rag found in Casa Tomé after its acquisition by Musei Valposchiavo. This rag, a relic from one of the sisters who lived there, now serves as a template for the collection, which includes table and kitchen items and fabric sold by the meter. Initially featuring raw linen with coloured lines on a grey background, the design has evolved to suit modern tastes and is now available in various colours with a simplified pattern.

Another significant product is the *Coperta Poschiavina* or Poschiavine blanket. These brightly coloured woollen blankets, traditionally part of a daughter's dowry and woven at home

Swiss linen. Source: Tessitura

before marriage, were a centrepiece in local households, often placed over the *cuci*, a kitchen couch. The museum houses a collection of these blankets, some displayed in their permanent exhibition. Each family had their unique version of the blanket, varying in colours and patterns. Tessitura Valposchiavo continues to produce these traditional blankets, preserving a vital part of local heritage.

SOURCES:

Casa tome: https://www.museums.ch/org/fr/CasaTom-7742

La Tessitura si mette in mostra: https://ilbernina.ch/2009/11/03/la-tessitura-si-mette-in-mostra/

Manifattura: https://tessitura.ch/it/manifattura.html

Podcast Tessitura Valposchiavo: https://www.rsi.ch/rete-uno/programmi/informazione/voci-del-grigioni-italiano/Tessitura-Valposchiavo--1491091.html

Premio alla Tessitura di Valposchiavo: https://ilbernina.ch/2010/02/11/premio-alla-tessitura-di-valposchiavo/

Quando l'arte della pazienza viene intrecciata con la passione nascono tessuti unici e di alta qualità: https://tessitura.ch/

Tessitura di Valposchiavo – Raffinatezza Grigionitaliana: https://ilbernina.ch/2012/10/06/tessitura-di-valposchiavo-raffinatezza-grigionitaliana/

Tessitura in Valposchiavo: https://intangiblesearch.eu/search/show_ich_detail.php?db_name=intangible_search&lingua=italiano&idk=ICH-FNU00-0000000316

FRANCINA CHIARA &
KATARINA ŠRIMPF VENDRAMIN

5.3. TRADITIONAL DRESS OF ALPINE REGION

The traditional dress of the Alpine Arc comprises numerous variations and countless local traditions. Nevertheless, underlying philosophies that lead us to these costumes' anthropological and psychological dimensions can be recognised. The history of traditional costumes is not only a history of clothing but also the history of its perception. With all the available evidence and the associated awareness of those who wear and observe the costumes, this perception is considered a construct of modernity. The search for costumes, their documentation and the discussions about them led to the emergence of costume movements at the end of the 19th century. In the 20th century, an alpine fashion trend even emerged.

This consideration does not negate the changes within the Alpine folk costumes. Despite the prevailing view that mountain communities' lives were mainly confined to the villages, their history is characterised by openness to outside influences, which led to cultural mixing and a redefinition of traditional dress.

As for the changes over time, which accelerated significantly from the late 18th century onwards, a distinction must be made between everyday clothing and clothing worn on special occasions, which has a public dimension associated with display, visibility, and identity. Throughout the region, the everyday clothing of communities in the Alps and Pre-Alps consisted of simple garments made of wool or a mixture of wool-hemp or wool-linen, as well as cotton for the summer. If unavailable locally, these fibres were processed on-site, spun and woven into predominantly dark fabrics with a simple structure, such as canvas or twill. These garments were often accompanied by shirts made of hemp or linen, woven locally from local raw materials and served as household linen.

Little remains of the everyday clothing, worn until worn out, with fabrics often recycled or subject to moth damage. Further factors contributed to the disappearance of popular clothing sources: the symbolic departure of mountain inhabitants from attire associated with deprivation and the initial perception of museums as places for extraordinary items. This hindered the emergence of institutions dedicated to preserving material culture narratives.

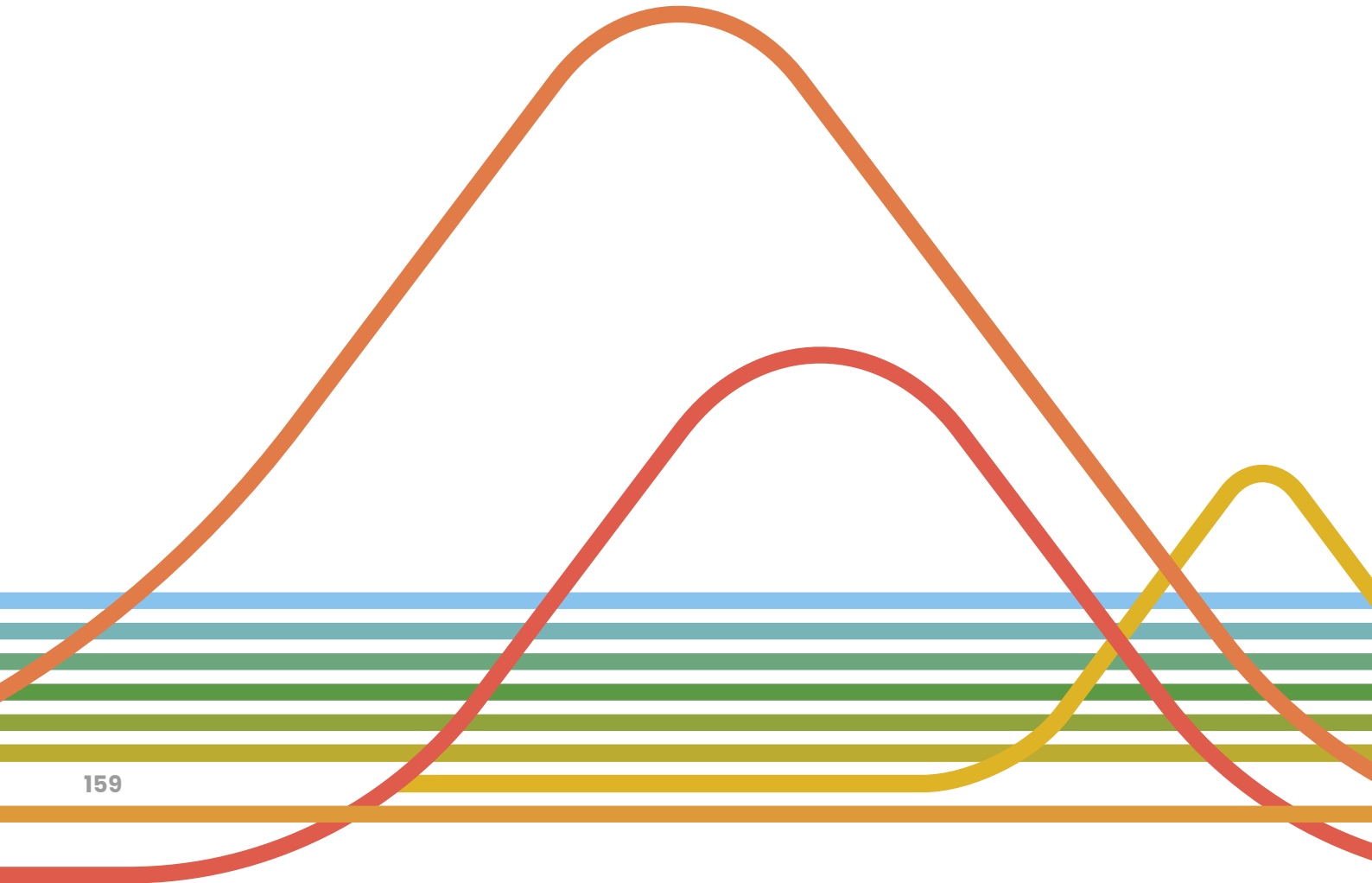
A different scenario unfolds with festive attire, wherein the projection of an inherent desire for social distinction manifests, as highlighted by sociologists like Simmel. There's an anthropological inclination toward ornamentation that attracts others and symbolically connects with the divine.

From the Cozie Alps in France to the Slovenian Pohorje, the various female garments of the Alpine region share a transposition of concepts related to abundance, formality, and decoration. They embody a tangible 'more is more' approach that gracefully navigates between luxury and frugality: abundance seen in the billowy, long skirts and shawls draping the shoulders, often with dangling knotted fringes; formality expressed through refined tailoring reminiscent of urban and courtly culture, frequently showcased in bodices worn over shirts; decoration through the use of elaborately colourful silk ribbons, the quintessential noble fibre, and lace synonymous with elegance and artisanal mastery. Aprons, sometimes made from luxurious fabrics, were often added to evoke the labour-intensive lifestyle and emphasise the implied wealth through layered clothing.

Some Alpine costumes are well-known due to the efforts of local communities to preserve and promote their cultural heritage through various initiatives: folk dance groups, historical reenactments, research resulting in valuable publications, and the establishment of museums dedicated to material culture.

However, in some places, traditional costumes are still part of everyday life and are worn at various festivals and cultural events, such as religious holidays, local festivals and fairs, weddings and special occasions, and other events where the rich textile heritage of the regions is displayed.

The traditional costumes of the Alps blend practicality, craftsmanship, and aesthetics, characterised by the region's unique geographical and cultural landscape.



WOMEN'S ATTIRE AND ALPINE CULTURE IN ITALY

FRANCINA CHIARA

The traditional women's dresses of the Alpine arc in Italy encompass a multitude of variations and countless local traditions. From the Cozie Alps to the Dolomites, the various female garments of the Alpine region share a realisation of concepts related to opulence, formality and decoration. They embody a tangible 'more is more' approach that gracefully navigates between luxury and frugality: fullness in the form of wide, long skirts and shawls covering the shoulders, often with dangling, knotted fringes; formality through refined cuts reminiscent of urban and courtly culture, frequently expressed in bodices worn over shirts; decoration through the use of colourful silk ribbons, the noble fibre par excellence, and lace, representing elegance and master craftsmanship. Aprons were often added, sometimes made from luxurious fabrics, to emphasise the labour-intensive lifestyle and the wealth implied by the multi-layered clothing.

Certain Italian Alpine costumes have gained recognition thanks to the efforts of local communities committed to protecting and promoting their cultural heritage. These efforts manifest in historical re-enactments, research leading to valuable publications and the establishment of museums specifically dedicated to the material culture of Alpine traditions.

PRAGELATO, IN VAL CHISONE, COZIE ALPS

In Pragelato, in the Val Chisone in western Piedmont, thanks to the joint efforts of the Mountain Association and the Guiot Bourg Foundation, there is now a costume museum that houses a collection of everyday and festive costumes. These costumes have acquired their current characteristics and forms through the gradual overlapping of the Franco-phonetic Savoyard culture with the pre-existing Franco-Provençal culture of the Escartones Alps.

The most significant development of this traditional costume took place in the 19th century when ribbons, lace and embroidery added colour and decoration to the austere mountain attire. The Sunday and festive costume typically consisted of a dark, more or less elaborate outfit, depending on the families' economic means. Fabrics such as velvet, prestigious and elaborately woven, and numerous pleats, carefully made by hand, indicated a wealthy family. Fabrics of French origin, synonymous with wealth and passed down from mother to daughter, included brightly coloured textiles associated with dark clothing and silk scarves with colourful patterns that followed the colour

Traditional gala costume of Macugnaga, a detail of the embroidered bodice; a patterned ribbon wraps the waist. Source: Instituto Marangoni

French ribbons used in the traditional costume in Alta valle Varaita, Piedmont. Source: Instituto Marangoni

Lu kulét, Alta valle Varaita, Piedmont. Source: Instituto Marangoni

palette of the corresponding Catholic liturgy: purple for Lent and Advent, green for ordinary time. Religion influenced the choice of clothing considerably. The Waldensians in the community preferred more muted colours and adhered to a long Protestant tradition of modesty. The sleeves of the dresses were fastened with five buttons or hooks, and lace collars were an important feature. The collection of accessories and jewellery, especially gold crosses, was particularly rich.

THE OCCITAN-SPEAKING ALPINE VALLEYS OF SOUTH-WESTERN PIEDMONT AND THE RIBBON CULTURE

As emphasised in an exhibition at the Filatoio di Caraglio Museum, ribbons, especially those made of silk, are an important part of the ethnographic heritage of the Alpine arc: they appear, albeit with local variations, in traditional clothing, especially in festive dress; they play a role in rites of passage and carnival rituals and serve as an ornament and ritual element in certain expressions of popular religiosity.

The study of the heritage preserved today in Cuneo shows that the ribbons from the late 19th to early 20th century, often decorated with floral and geometric patterns, were rarely monochrome. These ribbons came from Saint Etienne in France, a town near Lyon, known since the 18th century for an important ribbon industry that used the exquisite silk threads of the *fabbriche magnifiche piemontesi*, indicating a transalpine exchange of goods. These decorative elements were acquired by itinerant haberdashers who brought fashionable novelties to the most remote Alpine centres. The quality of these ribbons, which adorned festive clothing, was a code that revealed the owner's origin and social status within the community. The occasion also regulated the quantity and distribution. Weddings, important events in the life of the individual and the village to ensure continuity, could be emphasised by a unique code for placing these decorative materials, which were sometimes even presented as gifts. It is interesting to see how the *bindel'*, the local term for ribbons in general, was also used for children's headdresses, a precious community heritage, with different applications depending on gender. The same applies to jewellery such as the *Lu Kulét* collar from the upper Varaita Valley, which consisted of ribbons and metal ornaments in the shape of hearts or crosses, where the fabric dominated.

PARISIAN FASHION IN THE WALSER VALLEYS OF UPPER PIEDMONT: VAL ANZASCA AND VAL SESIA

Macugnaga and Rima, just two villages around Monte Rosa, are inhabited by the Walser people of Germanic origin who colonised the Alpine regions around the massif. The traditional costumes are the subject of research and publications, which show that they are not a closed identity but reflect the influences of French and Napoleonic fashions of the 18th century.

G. Gallarate, a traditional Walser costume of Rima, Val Sesia, the blouse's collar is made of puncetto lace. Source: Instituto Marangoni

People in Typical Costumes, Cortina D'Ampezzo, Veneto, Italy 1955, Touring Club Italiano. Source: Instituto Marangoni

The gala attire, worn at special community events, reflects this impeccably, both in the dress structure and in the use of ribbons and scarves, which enhance the overall impression of luxury that impresses the viewer. It involves a layering of garments and accessories. The bodice is the most precious and symbolic element in Macugnaga, as in other Walser villages or distant Tyrolean and Carinthian valleys, rather than in Val Gardena or Ampezzo. The bodice is borrowed from aristocratic dress and resembles the pièce d'estomac of the robe à la française, which was born in Versailles. It is reminiscent of floral embroidery made of coloured or golden threads: small garlands and delicate wreaths that evolve into bouquets and botanical triumphs emanating from a knot or an amphora. The insertion of the owner's initials reflects the desire for personalisation and self-expression, especially at wedding celebrations. For patrician families, the design became an exclusive emblem passed down through generations. The emphasis on the costume's bodice is intentional, as the chest and abdomen signify fertility and abundance, symbolised by floral motifs or the tree of life, meaning prosperity for the ancestors. In addition, eye-catching knotted ribbons further emphasise the attention to the waist or chest. In the case of the traditional costume, the rectangular bodice, without covering it, overlays a kind of corset/vest with a square neckline. The top is completed by the shirt, which is particularly emphasised by the neckline: an intimate garment that, in a ceremonial context, is enhanced by a *puncetto* collar, a typical needle lace from the Valsese tradition. It was challenging to make due to the lack of a loom and a graphic pattern. It may have Saracenic origins, as evidenced by the term *punto saraceno*, used locally for *puncetto*. This hypothesis is supported by the presence of the Saracen population in neighbouring Swiss Valais and the distinctly geometric nature of traditional puncetto decorative motifs reminiscent of Islamic art.

FOLKLORE IN CORTINA

An examination of Ampezzo's costume confirms two tendencies characteristic of mountain dwellers' clothing: a strong association of everyday Alpine dress with the scarce resources of an often difficult-to-inhabit area and an inherent desire for social distinction in dress for special occasions, involving precious fabrics that

were rare and difficult to produce locally and only became available in the late 18th century.

The original Ampezzo costume had Austrian and Venetian origins, the latter being understandable due to trade links centred on the timber supply from the mountains to the lagoon city. In its complicated and expensive form, consisting of black woollen ruffles woven in the valley, sleeveless bodices, shirts and aprons, it was not accessible to all women. This type of dress was later decorated with hand-embroidered tulle by the costume owner, making it a symbolic representation of social status and feminine prowess for married women, as embroidered tulle was forbidden for unmarried girls. In the 19th century, new colourful and cheerful decorations were introduced, entrusted to the usual ribbons and scarves with elaborately fringed macramé. As a result of tourism in the region, fuelled by English and German visitors, the headdress changed, being adorned with ostrich feathers, enlarging the brim and giving women a distinguished look in keeping with the dictates of romantic fashion. Compared to the rich jewellery of the holiday women, however, a more affordable material such as silver was used, carefully worked in filigree and imitated the local flora with metal threads.

SOURCES:

Meucci Reale, R. 2005. *Etno Folk a Cortina. Moda Storia Personaggi Evoluzione*.

Bologna: Renografica edizione d'arte

De Angelis, A. e Scherrer, G, ed. 2006. *Nastri/Rubans/Bindel. Scambi di seta attraverso le Alpi*.

Cinisello B. 2009: Silvana Editoriale. Fiori, F., ed. 2009. *L'abito, il lavoro,la donna. Abiti delle valli del Piemonte orientale e delle colline novaresi nel XIX e XX secolo*. Comignago (Novara): TLS editrice.

Ottonelli, S., Ed. 2015. *Froli e sanchét. Il costume femminile in alta valle Varaita*. Savigliano (Cuneo): L'Artistica Editrice

Comitato della Comunità Walser di Macugnaga. Ed. 2018 *Il costume walser di Macugnaga*. Domodossola: Grossi Hanzi Axerio Cilies, ed.

Undated Rout und Blow. Rima: Walser Gruppe

https://www.piemonteis.org/?p=6899

MONTAFON COSTUMES: NOTES ON THE HISTORY

MICHAEL KASPER & ELISABETH WALCH

Traditional costumes are an integral part of identity in many Alpine regions today. They are understood as traditional clothing of rural origin and preserved as cultural heritage, where great importance is attached to wearing them historically correctly and maintaining them in their original form. The widespread belief that traditional costumes have remained unchanged for centuries as part of folk culture applies particularly to women's traditional costumes in the Montafon. In contrast, men's costumes have played a relatively minor role.

In the earliest descriptions of Montafon women's costumes from the 19th century, it is clear that male authors from the city wrote about the relatively exotic women of a remote mountain region for a male audience. This corresponded to the bourgeois idea that the locals in the mountain regions always appeared in traditional costumes, in contrast to the fashionably dressed city dwellers. This notion, closely linked to tourism, has persisted to this day.

An extract from Ludwig Steub's classic travel book *Three Summers in Tyrol* (1847) illustrates the close connection between traditional costume and femininity:

This girl permits the remark that the Montafon women differ little in the cut of their dress from the women of the two Walser valleys and that they like to wear red skirts and red stockings, like the women in the inner Walser valley and among the Sylvians, as was once seen throughout the Bundnerland, where this colour was last seen in the Lower Engadine – a colour perhaps connected with nationality itself and characteristic of the Romansh women on both sides of the Rhaetian and then probably passed from them to the Valais women. On their heads, the opposite sex in Montafon wears a felt hat that looks like a man's hat without a brim, or even better, like the cap of a Greek priest. These things are called 'Mäßlen' and can take up and cover all the hair unless the woman prefers to let the long braids hang back, which is quite often seen. These 'Mäßlen' seem to have been widespread throughout Vorarlberg, Paznaun and Lechtal in their day.

In contrast to the frequent descriptions and visual depictions of women's traditional costumes, men's costumes are rarely mentioned. It can be assumed that men's clothing in the 19th century resembled that of the urban population and, therefore, did not correspond to the stereotype of the "isolated, culturally homogeneous and 'original' valley" and did not need to be mentioned. Analysing the oldest visual representations from the late 18th and early 19th centuries shows that the men are depicted in fashionable clothing, while the women are shown in traditional costumes. However, a closer look reveals a great variety and considerable changes even in the supposedly traditional pieces. Colour variations, changes in the neckline's shape and size, and differences in the headgear are evident. This indicates that the traditional costume does not contrast with fashion but refers to pre-industrial garments.

As part of everyday culture, traditional costume has always been subject to the influences of fashion and has changed accordingly. The so-called traditional costume was constantly evolving and was always being "remodelled" Otto

Montafon traditional costumes, Wolf Schruns, 20th century. Source: Montafoner Heimatsmuseum

Lithograph of Montafon folk costume around 1860. Source: Montafoner Heimatsmuseum.

Montafon traditional costumes, Franz Bertle, 1859. Source: Vorarlbergmuseum.

Montafon traditional costumes, 1912. Source: Montafoner Heimatsmuseum.

Pfister, who wrote the first travel guide for the Montafon at the end of the 19th century, aptly remarked:

The girls from Gaschurn differ from their counterparts in the rest of the Montafon in their headgear when attending church. They wear modern wreaths made of artificial myrtle and have done so for many years, while elsewhere, the so-called 'Schappele', a charming crown made of gold foil, is in use. The usual female headgear is the 'Mäßle', a kind of felt cylinder without a brim, which, seen from behind, is reminiscent in its bulk of the hats worn by Greek priests or, even better, the bomb buckets of our former militias. Would you believe that the almighty fashion itself has subjected this unique item of clothing, so far back in the remote mountain valley, to its constant urge for change? – And yet, it has. The attentive observer can recognise a whole range of nuances, from the worn, high, narrow and sparsely haired 'Mäßle' of the old woman to the low, wide, sparkling new hat of the proud young farmer's daughter, which, with its lush wreath of long, curly hair at the edge of the crown, bears witness to the changing tastes of the years.

This change also becomes evident in the Montafon Museum of Local History, where it is possible to compare the oldest surviving traditional costume with examples from the more recent past. While the essential elements of the Montafon women's costume probably date back to the 18th century, details such as headdresses, decorations and buckles were influenced by contemporary fashion. They reflected economic conditions (simplification and cost-cutting in times of crisis and scarcity) and social status (upper-class peasantry, various professions). Therefore, historical depictions of traditional costumes serve less as documentation of what is "correct" and "original" than as a snapshot of the zeitgeist.

This development underlines the fact that traditional costumes are a product of industrialisation. Regional developments have helped to ensure that the typical regional characteristics have been able to assert themselves. Some elements of the traditional costumes, such as the breast cloth or the ribbons, were made from delicate fabrics, which only became affordable for a broader population in the 19th century thanks to industrialised textile production. The introduction of machine-made wool processing in Schruns meant that the Juppe was only available in black in the early 19th century. Each traditional costume shows how mobility and migration influenced culture and everyday life in the mountain regions. For example, it is believed that the cap known as the *Belzbommera*, made of thick otter fur with a cross of green ribbons on the surface, only arrived in the valley during the Biedermeier period. The urban fashion of patrician women from Augsburg, Basel and Zurich is said to have served as a model.

In contrast to these changes, until the end of the 19th century, folklore research and numerous visual reproductions led to a fixation on unchanging traditional costume types. The social situation at the time and the emerging tourism industry led to an active search for traditional costumes or, often, their invention.

Montafon traditional costumes, 20th century. Source: Montafoner Heimatsmuseum

PRODUCTION AND USE OF MONTAFON TRADITIONAL COSTUMES

The traditional Montafon costume is deeply rooted in the local population and is still worn on numerous festive occasions and holidays. Individual elements can be slightly modified depending on the wearer's personal preferences. This can be seen in the unchanged individual elements that have been part of the traditional costume for at least two hundred years: *Juppe* (bodice), *Untermieder* (underbodice), *Brusttuch* (chest cloth), *Briesnöstel*, apron, apron ribbons, collar, braid ribbons, underskirt, *Schlutta*, *Glöggletschopa*, Montafon coat, scarf, *Mäßli*, *Sanderhut* or fur cap, shoes, stockings, neck bow (festive costume for women), or *Juppa*, skirt, petticoat, blouse, apron and neck scarf, *Muntafuner Jäckle*, knitted jacket, scarf, shoes and stockings (weekday costume for women).

The Montafon *Schäppele*, a crown made of silver and gold crimped metal threads and small metal flowers, and the Montafon *Mäßle* are characteristic features of the Montafon traditional costume. The region determines the typical choice of fabric and colours, the motifs, the manufacturing techniques and the materials used. All the decorative embroidery on the clothing is meticulously handcrafted from silk and cotton on black velvet, which takes experienced embroiderers around 500 hours to complete.

The models and patterns for the traditional costume date back to the early 19th century, although the roots go much deeper. Over time, the Montafon costume has changed in the colour and shape of the individual elements, but the overall impression typical of the region has been preserved.

The carefully crafted traditional costume made from natural materials is acquired once in a lifetime, gradually adapted to age and generally worn until the end of life. Children's traditional costumes are passed on within families and in the local traditional costume associations or neighbourhoods to children whose garments fit due to their size.

Traditional costume associations also pass on the knowledge and craftsmanship required to make the Montafon traditional costume. These associations play a crucial role in preserving the tradition, as the knowledge of the necessary craft techniques is centred on their members and passed on to others through courses.

SOURCES:

Antonietti, T., 2011. 'Alte Felder – neue Fragen', in Risi, M. (ed.), Alpenland. Terrain der Moderne. Münster/New York/München/Berlin, pp. 13-24.

Barnay, M., 1995. 'Historische Konstruktion von Ethnizität und die gegenwärtige Entwicklung des Regionalbewußtseins. Das Beispiel Vorarlberg', Montfort 47, pp. 30-33.

Beitl, K., 2002. Die Votivbilder der Montafoner Gnadenstätten. (Montafoner Schriftenreihe 7). Schruns, p. 44.

Brückner, W., 2005. 'Der ethnische Blick auf Kleider im kulturhistorischen Museum', in Selheim, C. (ed.) Die Entdeckung der Tracht um 1900. Die Sammlung Oskar Kling zur ländlichen Kleidung im Germanischen Nationalmuseum. Nürnberg, pp. 9-13.

Hessenberger, E., 2013. Erzählen vom Leben im 20. Jahrhundert. Erinnerungspraxis und Erzähltraditionen in lebensgeschichtlichen Interviews am Beispiel der Region Montafon/Vorarlberg*. Innsbruck.

Hessenberger, E., 2006. 'Auswertung der Interviews', in Hessenberger, E. and Kasper, M. (eds.) Lebenswelten junger Menschen im Montafon (Montafoner Schriftenreihe 17). Schruns, pp. 67-96.

Hueber, B., 1974. '„Muntafuner Hes“ – Montafoner Tracht', in Stand Montafon (ed.) *Montafoner Heimatbuch*. Schruns, pp. 233-243.

Huber, R., 2007. 'Heimat und Identität – Ein emotionsgeladenes Thema aus zeitgeschichtlicher Perspektive', in Rudigier, A. (ed.) *Heimat Montafon. Eine Annäherung* (Sonderband 4 zur Montafoner Schriftenreihe). Schruns, pp. 99-134.

Kapeller, K., 1991. Tourismus und Volkskultur. Folklorismus – Zur Warenästhetik der Volkskultur. Ein Beitrag zur alpenländischen Folklorismusforschung am Beispiel des Vorarlberger Fremdenverkehrs mit besonderer Berücksichtigung der Regionen Montafon und Bregenzerwald* (Dissertationen der Karl-Franzens-Universität Graz 81). Graz, p. 126.

Näge, H., 1923. 'Über Heimatschutz in Vorarlberg', Heimat. Volkstümliche Beiträge zur Kultur und Naturkunde Vorarlberg, 4, pp. 125-142, 157-170.

Pfister, O., 1880/81. 'Streifzüge im Montafon', *Jahrbuch des Schweizer Alpenclubs, 16, pp. 346-352, 356.

Rudigier, A., 2007. 'Der Heimatschutzverein Montafon. Ein Beitrag zu seiner Geschichte', in Rudigier, A. (ed.) Heimat Montafon. Eine Annäherung* (Sonderband 4 zur Montafoner Schriftenreihe). Schruns, pp. 177-222.

Rudigier, A., 2007. 'Montafon: Auf der Suche nach der „Eigenart“ des Tales', in Rudigier, A. (ed.) Heimat Montafon. Eine Annäherung (Sonderband 4 zur Montafoner Schriftenreihe). Schruns, pp. 47-98.

Rudigier, A., 2008. Ein kleiner Führer durch das Montafoner Heimatmuseum Schruns. Schruns, p. 9.

Rudigier, A., 2009 'Heimatmuseum und Heimatschutzverein als Bühne des Wirkens Richard Beitls', in Beitl, K. and Strasser, P. (eds.) Richard Beitl (1900-1982). Wissenschaft – Dichtung – Wirken für die Heimat* (Montafoner Schriftenreihe 21). Schruns, pp. 209-236.

Rusch, W. 1962 'Gedanken und Bedenken zur Trachtenpflege', Jahrbuch des Vorarlberger Landesmuseumsvereins, p. 167-172.

Steub, L., 1847. Drei Sommer in Tirol. München, p. 117.

Strasser, P., 2003. Montafoner ReiseBilder. In: Montafoner Schriftenreihe 10. Schruns, p. 45.

Tschofen, B., 1991. «Trotz aller Ungunst der Zeit». Anmerkungen zu einer zweiten Geschichte der Tracht in Vorarlberg. *Österreichische Zeitschrift für Volkskunde*, *94*(1), pp.1-46.

UNESCO - United Nations Educational, Scientific and Cultural OrganizationAvailable at: https://www.unesco.at/kultur/immaterielles-kulturerbe/oesterreichisches-verzeichnis/detail/article/historische-tracht-des-montafons.

Vorarlberger Landesarchiv, 1990. Landgericht Montafon, Sch. 25, Nr. 1386.

Walch, E., 2015. 'Die Montafoner Männertracht – „Zwischen Möglichkeiten und uniformellem Auftritt“', in Kasper, M. (ed.) Jahresbericht 2014. Montafoner Museen. Heimatschutzverein Montafon. Montafon Archiv*. Schruns, pp. 118-124.

Walch, E., 2015. 'Untersuchungen an der ältesten noch erhaltenen Montafoner Frauentracht', in Kasper, M. (ed.) Jahresbericht 2014. Montafoner Museen. Heimatschutzverein Montafon. Montafon Archiv*. Schruns, pp. 133-136.

Wallnöfer, E., 2008. 'Trachtenforschung als rassistische Delimitation . Gertrud Pesendorfer (1895-1982), Gretl Karasek (1910-1992), Erna Piffl (1904-1987)', in Wallnöfer, E. (ed.) *Maß nehmen – Maß halten. Frauen im Fach Volkskunde*. Wien/Köln/Weimar, pp. 24-52.

BREGENZERWÄLDER JUPPEN: PRODUCTION AND WEARING

ELISABETH WALCH & MICHAEL KASPER

Jupe is the French word for skirt. In the Bregenzerwald region, *Juppe* refers to the traditional women's costume. The choice of silhouette and black colouring goes back to the influential Spanish fashion of the late 16th and early 17th centuries, which impacted Europe. Today, there are six variations of the Bregenzerwald women's costume. The main differences lie in the combination of the bodice and skirt's colour and the fabric type used. Traditional rules govern the choice of headgear and accessories, which make the costume "legible": it can provide information about the wearer's marital status and the occasion fo r which it is worn.

THE ORIGIN AND EVOLUTION

The Bregenzerwald women's traditional costume is the preliminary product of a centuries-long development that links the Bregenzerwald with other cultural regions. The basic cut of the *Juppe* (textile rectangle and top) dates back to the early Middle Ages. The so-called *Stuchen*, the white veils of Bregenzerwald mourning culture, also have mediaeval origins. At the same time, the silhouette and black colouring of Bregenzerwald women's costumes can be traced back to the influences of Spanish fashion in the late 16th and early 17th centuries. However, tight-fitting bodices were avoided and replaced by *Ricken* (a loop

Bregenzerwälder Tracht, 19th century. Source: Montafoner Heimatsmuseum

Bregenzerwälder Folk Costume. Hiller 1940-1960, 1939. Source: Montafoner Heimatsmuseum

Bregenzerwälder Tracht. Hiller, 1940-1960. Source: Vorarlberger Landesbibliothek

Bregenzerwaelder Juppe. Source: UNESCO Austria

stitching technique), which allowed comparatively free breathing. In the mid-18th century, Bregenzerwald women began to embroider for St. Gatlener entrepreneurs, which influenced the development of regional clothing culture.

Around 1800, most women in the region wore a *Juppe* on weekdays, Sundays, and public

Bregenzerwaelder Juppe. Photo: Christian Kerber.

holidays. The last women to do so died around the turn of the millennium, as the tradition of young women and girls wearing traditional clothing on religious holidays had almost disappeared. It was only in the 2000s, with the emergence of the so-called *Trachtenboom* that brought together an international audience inside and outside Austria in various interpretations of traditional costumes, that the active promotion of traditional costumes in the region led to a revival of Bregenzerwald women's costumes in both religious and secular festive culture. The acquisition of a *Juppe* typically occurs between the ages of 20 and 40.

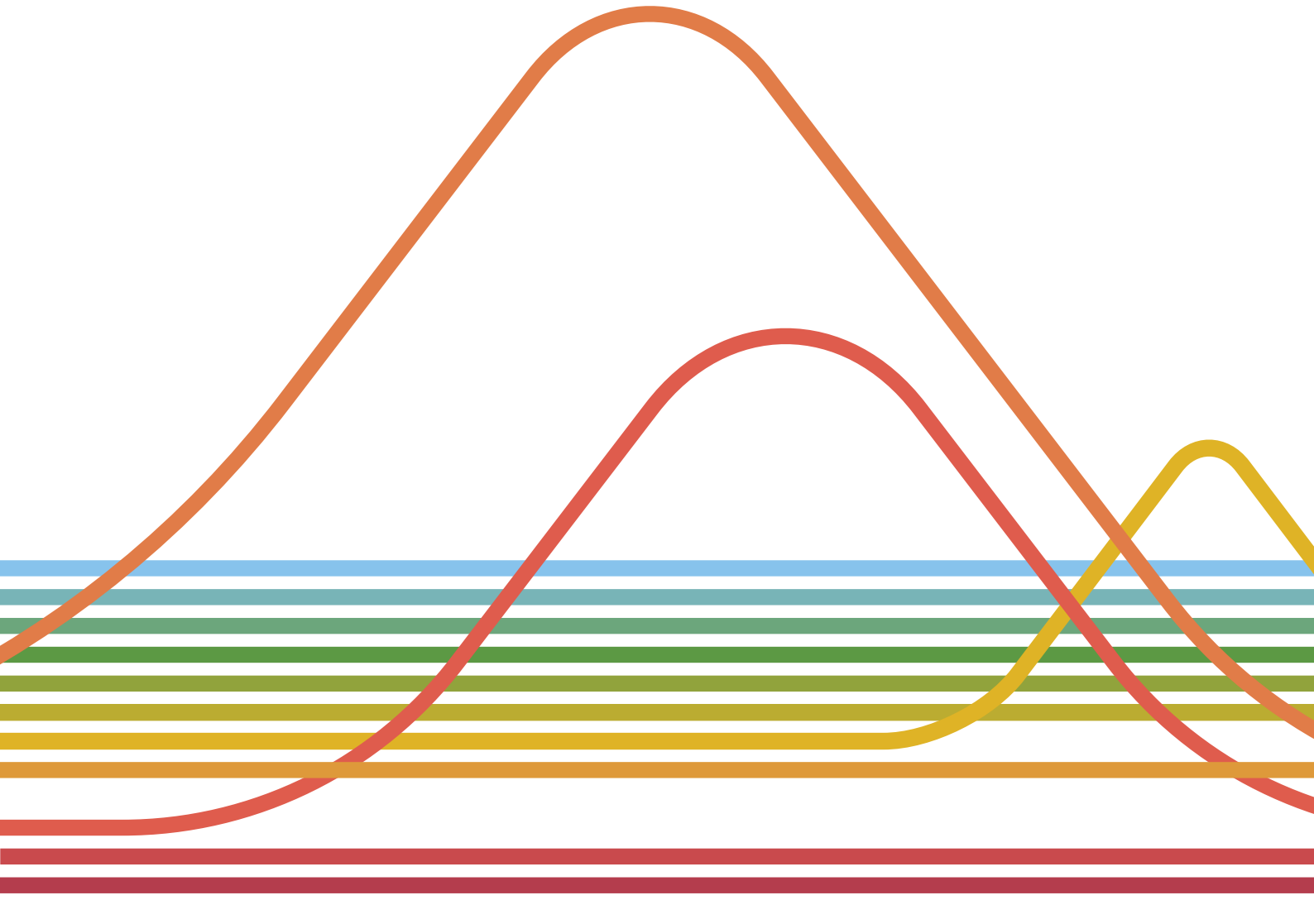
Before the COVID-19 pandemic, around 50 costumes were sewn each year. Today, pleated synthetic fabric is used for the majority of *Juppen* skirts, while around a third are still made from the traditional shiny linen fabric of the Juppenwerkstatt Riefensberg, according to centuries-old craftsmanship and the recipe of the last master *Juppen* dyer in the Bregenzerwald, Manfred Fitz from Egg.

The production of a *Juppe* is labour-intensive: the deep black pleats are made from shiny linen in the Riefensberg Juppen workshop. The embroidery or knotting work on the bodice and the production of headgear, such as the festive crown (*Schappale*), the pointed cap or the fur cap (*Brämenkappe*), are carried out by women as part of domestic side employment. This complicated process requires intensive communication between various individuals, such as craftsmen and traditional costume wearers, and promotes social cohesion. For many women who wear the traditional costume, the *Juppe* expresses their attachment to the region and its history, which they can outwardly display in this way.

The knowledge of how to make and wear Bregenzerwald women's costumes has been passed down from generation to generation for centuries: within the family, during apprenticeships in a craft (such as goldsmithing), or by private lessons with a (art)craftswoman. For around two decades, associations (INTRACHT, Juppenwerkstatt Riefensberg) have also ensured the continuity of the passing on of this costume through events, projects and courses.

SOURCE:

UNESCO-United Nations Educational, Scientific and Cultural Organization: https://www.unesco.at/kultur/immaterielles-kulturerbe/oesterreichisches-verzeichnis/detail/article/herstellung-derbregenzerwaelder-juppen-und-das-tragen-derfrauentracht.. 2021



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