มนุษย์และสังคม
มหาวิทยาลัยราชภัฏสกลนคร
Journal of Human and Society, Sakaet Rajabhat University

เทคโนโลยี Blue-Dyeing ในมรดกทางวัฒนธรรม แฟชั่นสมัยใหม่ และการบำบัดในยุโรปกลาง

Blue-Dyeing Technologies, in Cultural Heritage, Modern Fashion and Therapies in central Europe

Miklos Banhidi[1] / Gusztav Tornoczky[2]

[1]ศาสตราจารย์ ดร. คณะวิทยาศาสตร์ สาขาวิทยาศาสตร์การกีฬา มหาวิทยาลัยเซเคมมี่ ประเทศฮังการี

Professor Dr. of Science Program in Sports Science, Szechenyi University, Hungary

[2]นักศึกษาปริญญาเอก หลักสูตรดุษฎีบัณฑิตสาขาวิทยาศาสตร์การกีฬา มหาวิทยาลัยพลศึกษา ประเทศฮังการี

PhD Student of Program in Sports Science University, University of Physical Education, Hungary

ได้รับบทความ: 16 ตุลาคม 2564
ปรับปรุงแก้ไข: 7 มกราคม 2565
ตอบรับตีพิมพ์: 18 พฤษภาคม 2565

บทคัดย่อ

มรดกทางวัฒนธรรมของการย้อมสีน้ำเงิน ได้กลายเป็นประเพณีในยุโรปกลาง อุตสาหกรรมสิ่งทอและแฟชั่นขนาดเล็กจำนวนมาก แข่งขันกันเพื่อเลือกสีน้ำเงิน ซึ่งเป็นสีที่ได้รับความนิยมมากที่สุด สืบสานประเพณีการปลูกพืชด้วยเทคนิคการย้อมเย็นและเทคโนโลยีที่เรียบง่ายในการวาดภาพและพิมพ์ลวดลายบนผืนผ้า อันเป็นเอกลักษณ์ในประวัติศาสตร์อันยาวนาน โดยเริ่มจากชาวอียิปต์ จีน และอินเดียตามลำดับ สีน้ำเงินจากต้นครามและต้นโวด จึงมีค่าและสะท้อนการบำบัดโรคในทางบวกให้พลังงานทางจิตวิญญาณของจักระสีน้ำเงิน ให้คุณสมบัติทางยาและการรักษาแพทย์ทางเลือกต่างๆ รวมทั้งกลายเป็นสัญลักษณ์ของความสง่างามในการฟื้นฟูเสื้อผ้าแบบดั้งเดิม

สิ่งนี้พิสูจน์ให้เห็นว่าเสื้อผ้าที่ย้อมสีฟ้ายังคงอยู่ในแฟชั่นตลอดหลายศตวรรษ แม้แต่บริษัทจีนก็เริ่มผลิตชุดวิคตอเรียน ซึ่งเป็นโมเดลเสื้อผ้าประวัติศาสตร์ที่ขายดีที่สุดในปี 2020 ยุคสีน้ำเงินเข้ม เป็นเสื้อผ้าของผู้สูงอายุ ตอนนี้วงการแฟชั่นทันสมัยที่มีชื่อเสียงกำลังให้ชุดสีฟ้าแก่ทุกคน

นอกจากนี้ มรดกทางวัฒนธรรมการย้อมสีน้ำเงินในปัจจุบันยังเปิดโอกาสให้นักท่องเที่ยวได้เข้าใจศิลปะท้องถิ่นจากแหล่งที่มาของร้านผลิตภัณฑ์ย้อมครามและจัดแสดงในพิพิธภัณฑ์ผ้าใน Levoca (สโลวาเกีย) และใน Papa (ฮังการี) เทคโนโลยีการย้อมสีน้ำเงิน ได้รับการพัฒนาอย่างกว้างขวางในการออกแบบทั่วยุโรป โดยมีประมาณ 69 สูตรที่แตกต่างกัน

คำสำคัญ: เทคโนโลยีของการย้อมสีน้ำเงิน, มรดกทางวัฒนธรรม, การบำบัดโรคด้วยแฟชั่นสมัยใหม่, รูปแบบการวาดภาพและพิมพ์ลวดลายผ้าในยุโรปกลาง, อุตสาหกรรมสิ่งทอจากต้นครามและต้นโวด

Abstract

The cultural heritage of blue dyeing has become a tradition in the Central Europe. Many small textile and fashion industries competed with each other to select blue which is the most popular color. Continue the tradition of growing plants with cold dyeing techniques and the simple technology of painting and printing unique patterns on canvas in a long history, beginning with the Egyptians, China and India respectively. The blue from the indigo and woad trees are therefore valuable and provide a positive reflection of therapy. Gives blue chakras spiritual energy. It provides various medicinal and alternative healing properties, as well as becoming a symbol of elegance. In reviving traditional clothing, this proves

that blue-dyed garments have remained in fashion throughout the centuries. Even Chinese companies have begun to produce Victorian dresses, the best selling historical clothing models of 2020. Dark blue era. It's the clothes of the elderly. Now the famous modern fashion houses are giving everyone a blue dress.

In addition, today's blue dyeing cultural heritage offers tourists an opportunity to understand local arts from the source of indigo dyeing products and exhibited in fabric museums in Levoca (Slovakia) and in Papa (Hungary). Blue dyeing technologies have been widely developed in design across Europe, approximately 69 different formulas.

Keywords: Blue dyeing technologies, Cultural heritage, Modern fashion houses Therapy, Central Europe Painting and Printing Patterns, Textile and fashion industries Indigo and Woad trees

Introduction

Each time when someone will be asked about favourite color, the answer usually depends on individual taste or actual fashion trends. Scientists write about colors as a phenomenom, that is with us every second of our life (Wills, 2013). According to Ranson (2018) color is a catalyst for sales success within the fashion industry, it is the first thing consumers notice about a garment.

People always tried to color their life painting their living environment, planting flowers, dyeing their clothes. Different ages, genders view colors

from different perspectives and this raises the need to understand the psychology of customers (Juwaheer & Sahye, 2019).

For humans, three primary colors (blue, red, yellow) are usually used, since human color vision is trichromatic. In the study we picked the blue as the favourite color of most people in the past and recent years, who liked to wear blue clothes.

According to Munsell (2014). human needed always first acquire informational pieces before they can begin to understand color as a concept. It might seem simple as blue is blue, before the concept of color is understood. Children don't have the ability to understand that light blue and navy are both blue and they also lack the verbal skills to explain that to others.

Blue is one of the rarest nature color. The temperament of an individual also has qualities which concur with the properties of their respective colors (Mayer & Bhikha, 2014).

We still remember, when our grandparents in the second half of the twentieth century weared the dark coloured, especially dark blue clothes going to church or attending public or family celebrations.

History of blue-dyeing

The science of patterning and dyeing textiles has been known in India, China and Egypt for thousands of years, and this technique has also become widespread in the Mediterranean through trade, following the Roman conquests. The ancient Egyptians copied the wonders of nature

in their quest for health. Beside using different colors blue was used to mimic the colour of the sky (Mayer Bikha, 2014).

The blue painting itself originated in India, which came to Europe partly through Turkish mediation and partly primarily through French sailors in the 16th century. The spread of the craft of blue dye in Europe relates also to the Flemish, who were maintaining this craft from the 8th century. To dye the blue colour woad (Waid, Isatis tinctoria) was applied in Western part of Europe. It was grown in sizes of field lands by the peasants and lords of the provinces Thuringia (Germany) and the French Picardy. Dyes were expensive merchandise and the dyers were reluctant to share their experience and knowledge (Müllerott, 2017).

Blue colors in the textile industry were made at the beginning from plants, such as woad in Europe and indigo in Asia and Africa, while blue pigments were made from minerals - lapis lazuli or azurite. Indigo is a deep blue dye used to color cotton, wool, and other textiles. Today it is manufactured synthetically, but in earlier times it was derived from the indigo plant, a member of the legume family. The plant was chiefly grown in India (hence its name). In the Caribbean indigo was cultivated by European colonists. Later on to achieve more intensive color the semi-synthetic dye the Indigo carmine was used, the acid dye 'Saxon Blue', which was invented by Johann Christian Barth in 1743 (Keizer at al., 2012).

At the beginning of the 18th century the Eastern indigo reserve style was also appearing in the above mentioned areas featuring the dyeing material, the indigo, which was providing the blue color. Printing paste was applied to the printing which was protecting the basic white color of the

textile from turning blue. After several dips in the dye vats (küpa) and then after aeration due to the oxidation the reduced indigo began graduating the cotton and the linen clothes into blue. In the 19th century, synthetic blue dyes and pigments gradually replaced mineral pigments and synthetic dyes. In the Middle Ages, blue also became the color of the royal clothing. Everything started when the emperors started regularly wear blue clothes. Blue clothing became the symbol of nobility. The coat of arms of the kings of France became an azure or light blue, depicting a shield, sprinkled with golden lilies, better known in heraldry as fleur-de-lis. Blue had come from obscurity to become the royal color. Once blue became the color of the king, it also became the color of the wealth and power (Fig. 1). (Fashionologiahistoriana, 2018).

Figure 1 The Blue Boy by Gainsborough T., c. 17

At the beginning the more colour-proof indigo was used to repair woad, later the latter became dominant in the 19th century. That time blue was considered a versatile color, as suitable for elegant evening gowns and demure day dresses as it was for fashionable bonnets, slippers, and parasols (Fig. 2).

Figure 2 Depret Silk Dress from 1867 (Met Museum)

After dyeing the printing paste was taken off by a bath of hydrochloride-vitriolic acid and the basic white colour appeared. This blue and white colour was typical of the Eastern porcelains; therefore this new technology was called “Porcellandruck” by the dyers with the phrase “drucken auf Porcellan Art”

From the 20th century beside painting with carbon appeared the synthetic carbon with better quality, the so-called “indantren”, and connection to that the stanchion printing spreaded. Both technology are presented in the limited workshops of blue dye craft in Hungary (szellemikulturalisorokseg, 2020). Jeans

Blue dyeing in Hungary

In Europe, at the end of the 18th century and at the beginning of the 19th century, in order to fasten the textile printing the use of roller print machines was also experimented but because of its high cost it did not become general in the smaller factories. Parallely, the Perrotine machines (printing periodically) were coming out, first operated by hand, and later, with the penetration of the steam machines, operated mechanically.

In the second half of the 18th century, Western European countries suffered from an overabundance of skilled labourers in the textile and dyeing industry. For this reason, individuals and entire families migrated to Central Europe, thereby increasing the numbers of masters in the textile profession. The first working partnership began in Hungary with the cooperation of the northern cities (today is a part of Slovakia): L**ő**cse (Levoča, 1618). Eperjes (Prešov), Igló (Spišská Nová Ves) and Késmárk (Kežmarok), later on in other parts of the country (Fig. 3). The first shipment of indigo from East India arrived in Hungary in the 17th century on Dutch cargo. The textile printing instruments used pigment and pickle squeezing, allowing the painters used the woad to produce the colour blue. One specialized branch of the blue dye craft, came about from the end of the 18th century, means the special process of the stanchion printing and textile painting with carbon.

Figure 3 Blue dyeing locations in Hungary

Also a new technology of textile printing was developed by Kluge family, which was the reserve style cold indigo vat dyeing. This kind of textile dyeing was called “Schön- und Schwarzfärber” (Beauty-, and Blackdyeing). Johann Friedrich Kluge settled in West Hungarian town Sárvár and joined in 1777 the main guild of Bratislava. His son Friedrich Kluge, established his own workshop in Sárvár in 1783 after finishing his journeyman trip. Later, in 1786, he moved to another small Hungarian town Pápa with his family. Their workshop became stronger and stronger. Instead of the apartment and store on the ground floor with an arch,
a majestically appearing, multi-store house was built in eclectic style 1869. There were 6 indigo reserve dyeing workshops operating in Pápa around 1865. The strongest one was the Kluge factory. The boom of the economy, the industry, and the increasing of the trade in the middle and second part

of the 19th century was motivating even the Kluge Company of Pápa to increase the capacity and to start the modernization. That was how the old dyeing room, the "kypa" room, was enlarged with the construction of 12 dyeing vats as a new factory building on the side of the brook in 1880. The printing room for the traditional handprinting, the laboratory, and next to it the hand operated, wooden framed Perrotine machine could be found on the first floor. This equipment which made it possible to produce mass production required both the usage of printing blocks with new small patterns and that of printing blocks based on the old patterns. By the time of the 100th anniversary of the factory in 1883, the production developed to a level that could compete with the "Blaudruck-Färberei" factory, one of the leading companies of Transdanubia's factories. A masterpiece, a 12-person, 5-colour-print table-cloth was made for this event. The next enlargement of the factory was built over the brook on the turn of the 19-20th century. The 23-horsepower steam engine, the mangle which was operated by it, the starching machines, the drying machine, the steam heated rolls, on which the light material was prepared were located in the long one-floor building.

They had a separate room for polishing. It was running at full capacity up until World War I. At this time, a group photo of the employees was taken, with 22 men, 3 servants, 24 sales persons and Károly Kluge with his family (1912). The oldest and still operating blue dyeing workshop in Hungary is the Tolna Blue Painting Workshop, founded in 1810. The special feature of this workshop is that to this day it works with the old 11-ton manger, two modeling stands (“eagles”) and four painting tubs (“kilns”).

They have developed and still use the old, around 500 family sample trees. During the turn to the twenties century also other workshops were opened in Hungary.

The Kovács family opened a workshop in 1878 first one in Kecskemét, later they moved to Kiskunfélegyháza and Tiszakécske. The specialty of the workshop based on the family traditions, using the perrotin patterning machine from 1896 with its wooden slatted drying rollers, the painting cone with the star graphs sunk into the ground, the ironing machine of the early last century, hundreds of sample trees characteristic of all regions of the country (Fig. 4).

For blue dyeing they use an old recipe, which was published in 1932 (kovacskekfesto, n.a.):

- Cooking - Clean cooking of raw cotton fabric in a soda bath.
- Rinsing - Removal of dissolved contaminants in clean water.
- Drying - In the open air, wavy in a wavy line.
- Calendering - Ironing of the raw linen prepared for patterning.
- Drawing - Select the patterning locations based on the desired pattern and size.
- Patterning - Applying the cover layer with the sample trees in the form of a “priest”.
- Painting - Prepared according to a separate recipe in an 85 ° C paint bath.
- Rinse - Remove the patterned top coat in a rinse bath.
- Washing - Remove excess toner in clean water.
- Drying - In the open air, wavy in a wavy line.

- Starch - With hot potato starch.
- Drying - In the open air, wavy in a wavy line.
- Calendering - Ironing the material to a mirror gloss.
- Folding - Folding and end division of the finished material.

Building on the tradition (since 1695) of textile painting, in 1906 Peter Ehling opened his blue dyeing workshop, which still operates today. The equipment that is still visible in the workshop today includes an old blue-painted shopping box made of oak, which is interesting because it has a secret locking mechanism. When placed on a horse-drawn carriage and sealed, its contents were safe because its weight, which approached 300 kg, made it impossible to steal the crate. Here, among many other interesting things, you can find a sample book from the end of the 1800s, in which you can see the motifs that are the most popular in Transdanubia. From this book, the women in the area chose what pattern to put on their own woven canvases (gyorikekfesto, n.a.). World War II set all blue dye production back to the level of manual work because of the lack of raw materials. Seven generations continued to develop the enterprise until 1956 when the government took control of the factory. The buildings and the machines received protection by being given the status of historical monuments.

In 1948 in a small village Mr. János Sárdi founded a workshop and continuously developed it. In his workshop, all the operations of blue painting can be performed with the traditional indigo painting, as well as with the better known indanthrene painting. He also increased the stock of specimens, which is essential for blue painting, over the years, partly through purchases and partly with pieces made by himself.

Figure 4 Folk dress by Kovacs Blue Dyeing Workshop

As appreciation of the role of this culture in 2018, the technique and tradition of blue-dyed fabric in Europe was recognised by UNESCO as an Intangible Cultural Heritage of Hungary a neigboring countries Austria, Czechia, Germany, and Slovakia. Somehow these fabrics have managed to remain popular to this day – from traditionally inspired dresses, to napery, and their use in quilting. In Hungary the most known blue dyers were awarded as the Masters of Folk Art (Ildikó Tóth, Zsolt Gelencsér, Miklós Kovács, János Sárdi).

Preserving blue painting traditions today is more than just textile painting. Wearing clothes is part of folk identity, art and customs. In 1999 the 1st National Blue Painting Festival was born to demonstrate this. Every third weekend of July which is now of great interest across the border from here and beyond. During the festival: the ancient blue painting craft is

presented. Clothes and objects made of blue-painted materials are exposed to the eyes of visitors in an exhibition. A meeting of blue painters living in the country are organised at this time. There are also demonstrations on the works of the still working blue painting workshops. With the participation of choirs, dance groups and orchestras that nurture ethnic traditions, a two-day ferocious festival atmosphere prevails on the open-air stage set up near the blue painting workshop (Zentrum, 2014).

Figure 4 Blu Dye Folklore Festival in Hungarian village Nagynyárád (Source: Zentrum, 2014

Effects of wearing blue

From a leisure perspective there is a question, why blue color became so attractive in the fashion in the last centuries. The answer can be found also in the color psychology literature. According to some published articles color can play important role on the range of psychological, biological, and behavioral effects (O'connor, 2011; Canva, 2021). Human

eyes perceive blue when observing light which has a dominant wavelength of roughly 450–495 nanometres. When sunlight passes through the atmosphere, the blue wavelengths are scattered more widely by the oxygen and nitrogen molecules, and more blue comes to our eyes. This effect is called Rayleigh scattering, after Lord Rayleigh, the British physicist who discovered it (Miles, Lempert, & Forkey, 2001).

Blue dyeing technology was used beside textile painting as a hair dye and an eye cosmetic in Europe. West African women rubbed it into their hair and skin, painted their bodies with it, and used it for tattooing. It was burned as incense to ward off bad spirits. It was used as an antiseptic, contraceptive, and an abortifacient. A cure for syphilis and it roots were regarded as a powerful sexual stimulant. Bodies were tattooed for healing purposes, particularly at the joint as relief from arthritis. Indigo tinctures are used for eye infection and as salves for wounds (McKinley, 2011).

After a study, 453 nm (blue color) was proved to be an effective intervention for anxiety in students. It confers a greater improvement in anxiety than does no treatment (control). This is cost effective yet an effective way of treatment with no apparent side effects (Azeemi et al. 2018).

Blue calls to mind feelings of calmness or serenity. It is often described as peaceful, tranquil, secure, and orderly. Blue can also create feelings of sadness or aloofness. Blue is often used to decorate offices because research has shown that people are more productive in blue rooms (O'Connor, 2011).

The sight of the color blue causes the body to release tranquilising hormones when it is surveyed, particularly a strong blue sky and many

believe (blue) can lower blood pressure, slow the pulse rate and decrease body temperature" (O'Connor, 2011).

Summary

The culture of blue dyeing has become a tradition in the Central European region, thanks to the fact that several small workshops have taken on the competition with the almost endless offer of the textile industry. Choosing the blue color was the fault of the excellent characters of indigo plants, the long tradition starting with the Egyptian, Chinese and Indian culture throughout the middle age royal customs. Also the well known effects of the blue color certainly contributed to success. It provides a positive reflection of the environment, gives spiritual energy (blue - chakra) has become a symbol of elegance in the wake of traditional clothing. This proves it, that the clothes made from blue dyed textile stayed fashionable after centuries.

Even the Chinese companies started to produce Victorian era dresses, which is the best sold historical clothing model in 2020.

In the past dark blue dresses were the clothes of elderly people. Nowadays famous fashion houses provide blue dyed dresses for all generation. The blue dye culture nowadays attract also tourists, giving opportunities for travellers to understand the local art. Several shops all around the country provide blue dyed products. Museums were opened in Levoca (Slovakia) than in Pápa (Hungary) in 1983 on the 200th anniversary of the Kluge factory (museum, 2020).

Blue dyeing technology isn't a big secret anymore, although each workshop has its unique character. In all over Europe already 69 different

recipes were found and published (Müllerott, 2017). hoping to attract new textile entrepreneurs and increase its popularity.

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Author

Professor Dr. Miklos Banhidi
Science Program in Sports Science, Szechenyi University, Hungary
Tel: +3696503400 Email: Usa_tek@hotmail.com

Gusztav Tornoczky
University of Physical Education, Hungary
Tel: +3696503400 Email: gustav.tornoczky@gmail.com