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Understanding the integration of needle and bobbin lace in works of applied art

Abstract: Unique and inimitable man-made creations created by Russian and European lace makers of the past centuries have made a significant contribution to the development of decorative applied art, thereby enriching the world's cultural and historical heritage. The collections of museums contain monuments of material culture, among which a special place is occupied by samples of lace, which harmoniously combine the ancient techniques of embroidery and weaving on bobbins. The research is devoted to the revival of ancient technologies with the combination of needle and bobbin lace in works of applied art. The article reveals the relevance of regional-historical, cultural, artistic and creative approaches to research in the field of embroidery and lace-making. In the course of the research, modern empirical and comparative methods were applied, as well as historical and cultural approaches to the study of the issue. The authors used unique and rare materials of Russian researchers in the field of material cultural heritage preservation. The results of the research can be applied in the course of studying the issue of the historical and cultural heritage of Russian creativity.

Keywords: lace, museum, research, historical heritage, ancient technologies, recreation.



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Постигание интеграции игольного и коклюшечного кружева в произведениях прикладного искусства

Аннотация: Уникальные и неповторимые рукотворные творения, созданные русскими и европейскими кружевницами прошлых веков, внесли значительный вклад в развитие декоративно-прикладного искусства, обогатив тем самым мировое культурно-историческое наследие. В собраниях музеев хранятся памятники материальной культуры, среди которых особое место занимают образцы кружева, в которых гармонично сочетаются старинные техники вышивки и плетения на коклюшках. Исследование посвящено вопросам возрождения старинных технологий с комбинированием игольного и коклюшечного кружева в произведениях прикладного искусства. Раскрыта актуальность регионально-исторического, культурологического, художественно-творческого подходов к исследованиям в области искусства

вышивки и кружевоплетения. В ходе исследования были применены современные эмпирические и сравнительные методы, а также исторический и культурологический подходы к изучению вопроса. Авторами были использованы уникальные и редкие материалы российских исследователей в области сохранения материального культурного наследия. Результаты исследования могут быть применены в ходе изучения вопроса исторического и культурного наследия русского творчества.

Ключевые слова: кружево, музей, исследование, историческое наследие, старинные технологии, воссоздание.



Introduction

To develop the creative potential of the artist who creates works of applied art, to expand the possibilities of increasing the range of creative choice, it is necessary to know the ancient technologies of the needle and whooping lace.

Unique and inimitable man-made creations created by Russian and European lace makers of the past centuries have made a significant contribution to the development of decorative applied art, thereby enriching the world's cultural and historical heritage. The collections of museums contain monuments of material culture, among which a special place is occupied by samples of lace, which harmoniously combine the ancient techniques of embroidery and weaving on bobbins. The study of such works by future artists contributes to the development of their artistic and creative abilities and the implementation of new creative ideas.

The works of decorative and applied art, which have rich artistic content, are an excellent authentic material for recreating a complete comprehensive picture of artistic culture in the space of embroidery and lace-making. The monuments of material culture combining needle and whooping-cough lace, which are stored in the collections of museums, are of exceptional interest. Lace and textile product with an openwork ornament, created by the various interweaving of filaments, is divided into two types, depending on the execution technique: sewn with a needle and braided on bobbins. This scientific research includes the study of the creative heritage in the field of embroidery and lace-making, the collection of information about works of artistic textiles that combine the techniques of needle-sewn and whooping lace, the development of creative thinking and outlook, and the recreation of ancient technologies of artistic embroidery and lace. The work uses historical, cultural, artistic and creative approaches. The historical approach in the study highlights the specifics of specific types of embroidery and lace-making coming from a specific region of existence of the type and features of historical development. Culturological approach focuses are the study of the storage and transfer of experience, revealing the results of the development of traditional culture, the objective connection with the culture as a system of values, the development of culture as a system of values that represents the development of the person and the formation of his creative personality.

1. History and theory of integration of needle and whooping lace in works of applied art

Needle lace appeared at the turn of the 15th and 16th centuries. Before that time, various

types of openwork embroidery had been known in the countries of Western Europe, which was, in fact, a preparatory stage in the history of the development of lace. Italy was a leader in the production of needle lace. The closest predecessor of lace should be considered 'openwork embroidery', made in the stitching technique on a sparse canvas. The warp and weft filaments were pulled out in such a way that through square spaces were formed, separated from each other by filament rows not pulled out along the warp and weft, swept with a loop seam or an upholstery seam. Within the resulting grid, an openwork geometric pattern was placed, made with a needle by a loop seam or by interweaving the filaments together. This type of openwork embroidery calls a slit seam (point coupe), while the geometric pattern in the form of circles, stars and rosettes is known as "reticella". Openwork squares of such embroidery usually alternated with the canvas quadrilaterals or were arranged in rows, forming long through strips. The first lace was called a stitch in the air (punto in aria). It no longer had a fabric as its basis but was made with a needle with a loop seam according to a pattern drawn on paper. Starting work on been embroidered needle lace, mistress laid on contour drawing thick filament (suture needle forward) on parchment, attaching it with small stitches to parchment and placed under the parchment leaf. After that, the entire space, bounded by the contour filament, was filled with a loop seam. A warp is a filament that is laid on top of the prepared mesh or in those places where the fabric has been previously removed. When the work was finished, the outline was cut between the parchment and the canvas with scissors. So, the lace was separated from the painted pattern. While needle lace was derived from embroidery, bobbin lace was derived from weaving.

The appearance of pertussis lace dates back to the 16th century. Lace weaving is carried out on a specific roller, to which the ends of the filaments are attached, wound with the other ends on bobbins, which are wooden sticks with a neck for winding filaments. On the roller, there is a so-called 'chip', i.e., a technical drawing, a pattern drawn on paper with points for pinning. The lacemaker, weaving lace, twisting and weaving pairs of bobbins, inserts metal pins into these points, thereby fixing the filaments on the cleavage according to the pattern.

In the 16th century, special collections with patterns for lace products were published in Italy. The authors of these drawings were such artists as Nicolo Soppino (1527, 1530, 1537), Burato (1527), Paganino (1527), Tagliento (1534), Pagan (1546, 1550), Ostans (1557), Serena (1564), and Franco (1596) (*Davydova, 1892*).

At the end of the 16th and beginning of the 17th century, a new lace variety of guipure was created in Italy that was the leading country for the lace production at that time. Guipure is a lace pattern, sewn with a needle or braided, connected by thin bundles. Excellent lace of this type is kept in the State Hermitage Museum: a woven guipure made in Milan in the 17th century. Its pattern is made up of curved stems, from which large pomegranate and lily flowers depart. The contours are outlined with thin braided teeth. Italian guipures were highly valued and mainly intended to decorate men's clothing: collars, cuffs, frills, gloves, etc. In Genoa, lace was made, woven from gilded and silver filaments. Gold and silver lace were used to decorate the clothes of the nobility and clergy. In women's clothing, it was sewn in the form of a border on wide skirts made of satin and velvet or on bodices. Men's camisoles and caftans were also richly decorated with metal lace.

Famous Russian lace researcher and collector S.A. Davydova, in her book *Russian Lace and Russian Lacemakers*, described her trip to Italy in 1882 to get acquainted with the lace industry

and the activities of the School of Lacemakers, which was under the high patronage of Queen Margaret of Italy, and other lace schools and workshops in this country. Extensive sketches of the lace business in Italy were published in the 9th issue of the Labor Commission for the Study of the Handicraft Industry in Russia for 1883. Davydova wrote that "... looking abroad at the life of craftswomen, their aspirations and the results of the activities of society and governments, I was convinced of the correctness of the assumptions about what we want for our lacemakers. The idea of setting up a school in St Petersburg to improve the work of provincial lacemakers, teach them how to draw, and renew several weaving techniques that make up the beauty and distinctive features of our ancient lace, but have been absolutely lost by modern laces... This thought no longer left me" (*Davydova, 1892*). In St Petersburg, on August 20, 1883, a Practical School of Lace Makers was opened through the Davydova's efforts. According to the developed program, the classes consisted of studying the ancient technique of lace weaving, restoring this technique, applying it to work on new lace patterns, drawing lace patterns according to given patterns, and making correct chips based on them. In 1884, the school became the Mariinsky, and in 1888, it was under the August patronage of the Empress Maria Feodorovna. Since 1890, lace schools and training workshops have been opening in many provinces, where the lace has long been weaving. The best schools, according to V.A. Faleeva, were six schools: three in the Orel province (Mtsenskaya, Palenskaya, and Svishchenskaya), Kukarskaya in the Vyatka province, Alexandrovskaya in the Moscow Zemstvo, and Borisovskaya in the Ryazan province (*Faleeva, 1983*). Graduates of the Mariinsky School of Lace-makers taught in these educational institutions. The study of lace-making was promoted by visual tutorials – albums of samples. The works, made by the students of the Mariinsky Practical School, were included in the collection of the best examples of Russian artistic handicraft work. They were exhibited at the second All-Russian Handicraft Exhibition in 1913 in Petrograd. The album dedicated to the exhibition was an 'artistic chronicle' of handicrafts in Russia. In the preface, the authors noted the desire of artisans to adhere to "local artistic attachments", which will make it possible to express "Russian beauty" more vividly and strongly. Among the styles of all-Russian folk art, the dominant position is occupied by the 'Great Russian, folk, historical' style, followed by the "little Russian" style using folk patterns and artistic motifs of the 18th century. "Then we should note the echoes of the Italian Renaissance, echoes of the empire style, so closely related to our antiquity of the early 19th century and even transformed into a special Russian Empire" (*Russian folk art, 2008*).

At all times, women of different classes loved to do needlework. The objects created by them with lace and embroidery have always served as an interior decoration of their home. To help the craftswomen, specific literature was published, in which a particular technique was described in detail, recommendations were given and drawings of lace and weaving schemes were attached. In the publication *The Complete School of Women's Needlework* for 1915, drawings with a description are presented: "Lace with squares of a grid, through arcs with teeth and connecting figures with a pigtail and leaves. The Maltese lace pattern is executed with 22 pairs of bobbins" and "Stitching of figures with linen weaving, shells and rosettes with a pigtail and pico. A copy of the Italian lace of the 17th century is made with 30 pairs of bobbins" (*Complete school of women's needlework, 1915*), as well as chips and samples of works.

The research of the influence of Italian lace on Russian lace-making allows accessing a high

pattern decorative art of the past, stored in museums and trace the development of the education system in the space of lace and ways to recreate masterpieces of applied art. Museum exhibits and information from literary sources convince us that, developing during the late 19th and early 20th centuries, the art of lace-making in Russia responded to the demands of the time and reflected the influence of European centres of lace production. It absorbed the best features of decorative and applied culture and created original works of lace art creatively rethinking (*Lonchinskaya, 2009*).

The State Hermitage Museum has a large collection of costumes from the 18th to the early 20th centuries: the famous collection *Peter the Great's Wardrobe* every day, ceremonial and uniform costumes of Russian emperors and empresses and dresses created by famous fashion designers Ch. Worth, P. Poiret, A. Brizak, O. Bulbenkova, N. Lamanova, and others decorated with lace. Attention is accented to the masterpiece of the State Hermitage Museum textile collection *Ballgown Made of Light Green Fi. The 1890s.*, inventory number E/rt 12901 a, b (*Korsbunova, 1979*). (*Figures 1, 2*) Dress, from the collection of the Yusupovs, executed in the workshop of A.T. Ivanova, a supplier to the Court of His Imperial Majesty, reflects the fashion trends of the late 19th century including the combination of needle and whooping lace. The ball gown on the chest, sleeves and hem is decorated with inserts of white satin with silver filament embroidery, sequins and rhinestones, and an application of floral motifs of the ecru lace coupling. The neckline and the bottom of the skirt are framed with white ostrich feathers. When creating fashionable outfits, tailors used both French-made lace and lace made by Russian craftsmen.

Thus, a little less than a century has passed, many terms have changed: the names of techniques and elements of weaving, but thanks to the preserved drawings, chips, we can recreate the old lace that interests us. Also, valuable, sometimes the only source of information for us is the beautiful old lace samples themselves. These means that it is possible to study and recreate them, which, in turn, leads to the restoration of forgotten, lost technologies of the needle and whooping lace.

2. Unique patterns of integration of needle and bobbin lace

The collections of museums contain monuments of material culture, among which a special place is occupied by samples of lace that surprisingly harmoniously combine the ancient techniques of embroidery and weaving on bobbins. The study of such works by future artists contributes to the development of their artistic and creative abilities. According to Antonio Banfi, this world achieves “the most subtle, sophisticated results not only in line with lofty goals but also with the help of the materials themselves, using the decorative possibilities inherent in them. The ability of a craft artist to identify these possibilities can and does reach extraordinary heights: majolica, art glass, lace, fabrics are from this point of view a well-known example” (*Banfi, 1989*).

Combined lace, including needle and bobbin lace, can be divided into the following groups: ribbon lace, lace bobbin motifs with needle fillings, lace motifs sewn on a tulle base, needle lace motifs with a scalloped border, woven on bobbins.

In 2014, the St. Petersburg State Ethnographic Museum presented a unique Italian collection of the largest lace collections in the world from the 16th to the 20th centuries. The art of lace weaving appeared in Italy in the 16th century and became an important part of the

European cultural heritage. At the exhibition *Creative Excellence. Beauty and craftsmanship in Italian: Between tradition and modernity*, it became possible to study about 200 works of Italian textile art from state museums and private collections in Italy. The presented collection of ancient artefacts and rarities made from the 16th to the 19th centuries – church vestments, table napkins, tablecloths, lace and fabrics show the highest craftsmanship that meets the standards of “beauty and craftsmanship in Italian”. The exhibits, created from the 16th to the 19th century, indicate that it was fashion trends that determined the ornamental solutions and technological techniques for the execution of various lace products.

As part of the research, the exhibition drew our attention to lace products with a combination of needle and whooping lace. For example, in the old ribbon lace, the pattern was made with a ribbon or ribbon woven on bobbins (*Figure 3*). The spaces between the strips and bends of the ribbon were filled with various openwork elements of needle lace in the form of jumpers, i.e., brides. To do this, we lay the working filament between the braid connection to the place where the bride begins. We fix the filament in a definite interval and return it to the starting point, performing a loop seam, a smooth roller or a darning seam. An even number of filaments is laid for a bride made with a darning seam (eight) (*Figures 4-6*).

In the lace motif, woven on bobbins, the fillings are made with needle lace in the form of a blown seam. In rounded forms formed by drop-shaped ones fill with cobwebs. When pulling horizontal and vertical filaments, intertwined webs at one point, at the same time, two stitches fasten the tapes at one point, and only at the intersection of the “spider” flooring is embroidered. Instead of a “spider”, you can make a ring (*Figure 4*).

The outer spaces near the strips and bends of the ribbon were filled with openwork elements of needle lace. The internal spaces between the strips and bends of the tape were filled with jumpers (brides). To do this, we lay the working filament between the braid connection, to the place where the bride begins. We fix the filament in a definite interval and return to the starting point, performing a loop seam, a smooth roller. On each jumper (bride), knots are made in three turns of the filament and seam “hinged loops” (rococo knots) is sewn.

Examples of lace that adorn the decorative decoration of the interior are interested. For example, a linen curtain with patterns of flowers, leaves and curls characteristic of the Early Renaissance, decorated with ribbon lace, the pattern of which was created by a braid or ribbon woven on bobbins and dating from the end of the 19th century (*Figure 5*). In the lace motif, the fillings are embroidered with needle lace in the form of a blown seam, needle lace, “spiders”, “kopecks”, “cobwebs”, “nets”, “rings”. The floral ornament of the bobbin lace is decorated with embroidery in the style of “Renaissance”.

Lace tablecloth with rose form patterns was made by Italian craftsmen in the 19th century (*Figure 6*). Floral motifs of bobbin lace are connected by a Venetian seam in a single composition. A square linen tablecloth of the 18th century with an ornament of flowers and leaves is decorated with stitches of English white smooth surface, combined with braided triangular inserts, with relief mats, and a lace border, multi-pair weaving techniques. The work uses a combination of English white double-sided surface on the flooring and slotted surface with bridges. White, slotted surface in the technique of “Richelieu” is a cut-out pattern on the fabric-base with jumpers (brides). The corner squares are made in the technique of embroidery “old guipure” (*Figure 7*).

Special attention should be paid to the work with a combination of needle and bobbin lace, created in the heyday of the era at the turn of the 17th and 18th centuries. A concise and rigorous composition square tablecloths, a field which is divided into geometric shapes: squares, triangles and rectangles filled sirloin embroidery and its kind of Burano and embroidery on the grid (*Figure 8*). Large squares in the center of the tablecloth made embroidery mesh floral ornament. The middle squares at the corners of the tablecloth (2 squares) are made with embroidery on the grid. The corner squares are made in the technique of embroidery “old guipure”. There is a needle lace. White, slotted surface in the “Richelieu” technique is a cut-out pattern on the fabric based with jumpers (brides). The tablecloth is framed by a braided border of whooping lace of multi-pair weaving technique.

For the decoration of linen, towels, sheets and other items, border lace was intended (*Figure 9*). The decorative expressiveness of this type of lace is achieved by combining the “Richelieu” needle lace motif with jumpers (brides) and the lace edge of the coupling technique of weaving, which represents simple ornamental rows with alternating one element of the composition.

Created in France in the 17th and 18th centuries, the lace bedspread with a pink silk taffeta lining has a rich harmonious ornament (*Figure 10*). The composition of the work is created in the Baroque style. In the centre of the product is a medallion, executed with fillet embroidery with a floral pattern. The smooth edges are decorated with flowers embroidered on the mesh. Application is in the form of rose stems. The space between the strips and bends of the ribbon was filled with various openwork elements of needle lace in the form of jumpers (brides). To do this, we lay the working filament between the braid connection, to the place where the bride begins. We fix the filament in a definite interval and return it to the starting point, performing a loop seam, a smooth roller or a darning seam. In the lace motif, woven on bobbins, the fillings are made with needle lace in the form of a blown seam. Rounded forms, created by drop-shaped forms, fill with cobwebs. When pulling horizontal and vertical filaments, intertwined webs at one point, simultaneously fasten the tapes at one point of intersection and embroider the flooring “spider” or “ring”. In this unique work, a combination of lace woven on bobbins, openwork embroidery by “Richelieu” technique, embroidery by a cordon, darning seam, rody embroidery, secret embroidery used. The work has survived, thanks to several restorations.

In the collection of the State Hermitage Museum, there is the large collection of Western European lace, among them “... an excellent collection of lace that belonged to Stieglitz, where the rarest examples of early Italian and Flemish lace come from...” (*Biryukova, 1959*). It should note that such a home textile item as a linen pillowcase made in Spain in the 17th century (*Figure 11*). The product was received by the State Hermitage Museum in 1923 from the Museum of the Central School of Technical Drawing of Baron Stieglitz. Petrograd; 1886 – from the collection of J. Kraut, Frankfurt on the Main Inv. No. T-4132 (MSH 3329) (*Kosourova, 2004*).

The embroidery with linen filaments on the slit and silk filaments with a smooth surface, a sewn strip of bobbin lace with a pink silk ribbon interwoven, and linen brushes at the corners are interested. At the edges of the pillowcase is decorated with alternating stripes of stitching with a geometric pattern. Stylised flowers, placed in the central field, embroidered in pink and green silk are supported in colour by a woven pink ribbon. This work is a typical example of home embroidery and lace on homespun fabrics.

N.Y. Biryukova noted that by the end of the 16th and at the beginning of the 17th century,

“lace with the image of biblical and mythological scenes and characters appeared, and in the same product, embroidery techniques and needle-sewn or braided lace were often combined. ... The ego was manifested in the application of both techniques on the same product, in the commonality and continuity of the development of the ornament” (*Biryukova, 1959*). A unique work of applied art created in France or Italy in the 16th century – a valance decorated with embroidery on a loin net with linen filaments and whooping-cough lace (*Figure 12*). Item dimensions: 40 x 306 cm. The product was received by the State Hermitage Museum in 1923 from the Museum of the Central School of Technical Drawing of Baron Stieglitz, Petrograd; 1886 – from the collection of L. Rickard-Abenheimer, Frankfort-on-Main, inventory number T-54 (MS 8636/16) (*Kosourova, 2004*). The narrow long valance is decorated with embroidery with white filaments on the fillet net. Figures of hunters and various animals are depicted in diamond-shaped forms from a harness: lions, wild boars, hares, dogs, mythological gryphons. These small, dynamic compositions, staggered in two rows, create an intricate combination of hunting scenes. The lace edge of the multi-pair weaving technique is an elongated prong with a geometric pattern of plaits and nasnoks.

Thus, the presented monuments of material culture testify to the high skill of lacemakers and embroiderers, who managed to combine embroidery and lace, and indicate the narrow specialization of the craftswomen. Unique pieces combining needle and bobbin lace, stored in museums and private collections, are an excellent authentic material for recreating a complete comprehensive picture of the artistic culture in the field of lace-making and embroidery. Art education using art promotes the development of imagination and imagination. In the process of implementing aesthetic education, it is necessary to solve the following tasks: to systematically develop the aesthetic perception, feelings and ideas of the student, their artistic and creative abilities, to form the foundations of aesthetic taste. The educational process must be carried out on a scientific basis, taking into account the current level of development of decorative and applied art, in the field of artistic embroidery and lace, in compliance with the principle of gradualness, consistent complexity of requirements, a differentiated approach to knowledge and skills.

3. Technological features of making needle lace, lace, woven on bobbins and combining them on the examples of old samples

Of all the types of needle lace, the most beautiful is the lace of European countries, especially Italy, Spain, and the Netherlands, e.g., the lace under the name “hedebo”, originated think of Denmark, “reticella” lace (Italy), “sunny” laces, also known as “Tenerife” (Spain). These laces, perhaps somewhat different in appearance, were also found in other countries. So “sunny lace” is known as Paraguayan and Brazilian, and Russian: “old guipure”, “Vologda glass”, “soap bubble”.

The pattern in the ‘reticella’ technique can take the form of individual motifs of very different shapes (round, square, triangular, agramanta and stitches) or dimensional lace. Any of these motifs, you can sew directly on the fabric or run separately on the substrate (like sewing “sunny lace”) (*Figure 13*).

In the first case, to form a grid as you would when sewing lace of “hedebo”, i.e. cutting the fabric and pulling brides or pulling brides on top of the fabric and after all the work cutting out the fabric under the embroidery.

You can make a mesh by pulling the filaments from the fabric and complementing the stretched brides along with the pattern. In the second case, the motif is sewn separately on a substrate made of cardboard and two layers of any fabric. The entire substrate is swept together and the motif pattern is transferred to the cardboard by piercing the cardboard with a thick needle. Then a double working filament is laid along with the pattern, attaching it to the cardboard with an ancillary filament. To do this, the needle with an ancillary filament is inserted from the wrong side through a puncture on the face, wrapped around the working filament, and removed through the same puncture from the face to the wrong side. It is necessary to make sure that when performing this operation, the working filament is not pierced and drawn into the hole of the cardboard. Then, the missing brides are stretched over the substrate, and the cuttings are embroidered.

When the work is done, the ancillary filament is carefully cut between the fabric layers, removed with tweezers and the motif is removed from the substrate. Then it is applied in the right place on the fabric, sewn along the edge filament of the motif to the fabric with a loop seam or a smooth roller, and the fabric under the lace is carefully cut out.

However, it is easier, and more often, to get a mesh for embroidery of “reticella” lace by pulling the filaments directly from the working fabric (*Figure 14*). However, in this case, the fabric should be a plain weave. The number of remaining filaments of fabric dividing the grid into cells of a given size must be even. The cell size is determined by the pattern. Usually, the cell side is large (4-6 cm), but it can be smaller (up to 1 cm). It should clarify that this embroidery technique on a grid with large cells is similar to some types of Russian embroidery-cross stitch. These are the so-called “old guipure”, “soap bubble”, dream motifs, “Vologda glasses” (*Figure 15*).

When sewing the lace edge, the mesh is formed along the edge of the fabric swept or reinforced with a double row of the seam “forward needle”. All brides (both from the left fabric filaments, and the stretched filaments) are mended; then cutting is done. At the end of the work, the fabric edge is treated with a loop seam or a smooth roller. Before you start sewing the lace edge, you must carefully calculate the number of cells in a row, determine the number of rows and the size of the cells. It is especially difficult to do if the lace is supposed to be embroidered around a rectangular napkin because a small error in the calculation can disrupt the pattern of the corners and the lace as a whole.

To this day, the amazing art of lace openwork embroidery has been preserving, in which the ornamental composition is created with the help of an additional warp filament, a warp. Until now, the old inhabitants of the northern villages have distinguished between the terms “embroider” and “scribble”. Fashion “scribble” means to pre-pull out a definite number of filaments of the warp and weft, but sometimes cut a definite hole, prepare the mesh, wrap it and paint with various patterned motifs – “beauty” – with the help of an additional filament-snovki. The peculiarity of the cross-stitch embroidery “Vologda glasses” is that it is a direct transition from embroidery to needle lace. Unlike the previous types of stitch sewing, the horizontal and vertical columns that separate them consist of solid filaments of the fabric, and the mesh itself is formed from air loops.

Among the various types of cross stitch, the Vologda glass line stands out with specific beauty. Vologda glass, a unique type of stitched openwork embroidery with a geometric ornament, the pattern of which resembles frost-painted glass. Embroidery originated in the Novgorod region but was developed in the Vologda region.

This embroidery type has very limited to use fabric filaments and a pattern made with additional needle weaves. This embroidery is performed with thin spool filaments (no. 60, 80) or floss. To fulfil on the fabric, outline a square (rectangle), divide it into four smaller squares, cut out these squares, leaving between them 6-8 fabric filaments (thin), cut out the holes from corner to corner with diagonal tips in several rows so that the width of the tips corresponds to the width of the ‘thin’. Then the “tonki” and nasnovki are intertwined with filaments using the ‘flooring’ technique. In all the formed empty triangles, additional circular filaments, closed with a loop seam following the drawing, are stretched. The mats should be laid weakly, without tension to form circles and semicircles in the finished form. We process the sides of the square with a loop seam and make a grid of air loops in the direction from the centre to the sides of the square. The first row of air loops is made at the second circle, in each segment separately. We lay the second row by the reverse course of the working filament picking up the loops of the first row (Nosan, 2011).

An example of a finished product with motifs of whooping and needle lace ‘Vologda glass’ can serve as a tabletop (Figure 16). Pertussis lace of the coupling technique of weaving is an openwork pattern formed by a narrow endless polotnyanka – vilyushka. A method of weaving lace with a small number of pairs of bobbins (up to 10-12 pair), where the background and pattern are performed separately, and then connected with a tambour hook. Figure diagram of this lace reproduced in the book *Russian Lace and Russian Lace* by S.A. Davydova (Table XXV) and annotated *The Ends of the Towels. Mid-19th Century. Ryazan province, Mikhailov* (Davydova, 1892) (Figure 17). The edge with a pattern in the form of hanging bushes with flowers is woven with linen filament on bobbins. Polotnyanko weak grid is a distinguishing feature of the time.

In the Vologda valance, embroidery in the technique of “Vologda glasses” is combined with whooping lace (Figure 18). The edge with a pattern in the form of hanging lush bushes with flowers is woven with linen filaments on bobbins. The narrow linen cloth creates a drawing, floral fillings and background grids are woven with brown, ochre and dark green silk. The colour enhances the decorative expressiveness of the work.

In embroidery, designed rosettes were made with the help of snovki’s filaments, sheathed with a loop seam or with air loops (Vologda glass). These embroideries are light, transparent, and their designs are striking with ingenuity. They are based on the use of figures of stars, rosettes, and rhombuses in patterns (Figure 19). Embroidery was made of white linen or harsh filaments, sometimes interspersed with coloured or metallic filaments. Strips of such sewing, alternating with silk ribbons and lace, gave an elegant look to peasant aprons, curtains, and towels. The pattern consists of a series of identical openwork squares connected by thin lintels. The size of the square is from 4 to 8 cm, depending on the drawing. The main square is divisible by four small squares, between which six to eight filaments of the fabric are left, the so-called “thin” (Figure 20), and the remaining filaments are cut and pulled out. If the square is made as an independent tracery, then first seal the square edge with a roller or a loop seam before pulling out the filaments along the intended contour. If the drawing consists of several squares, the

number of filaments between them is enough left in the square centre (six to eight filaments). From corner to corner along the two diagonals of a large square, we lay six to eight warp filaments. To make corners of the square carefully, we throw the diagonal filaments before the square edge starts. From the centre in a circle, we begin to embroider the selected version of Vologda with an air-loop seam, the motif “soap bubble”, “mending motifs”, “darning” or the techniques of the composition “Vologda glass” selected (*Figures 20 a, b, c, d, e, f*).

It should consider the creative work that performs various art techniques of decorative and applied art of embroidery and lace. The researchers conducted serious research to study works of folk art in museums. They made sketches of fragments of various embroidery with gold and pearls and lace-making motifs. Also, they described the ancient technologies of artistic embroidery (satins, sets, banners, double-sided white surface, sewing on a grid, needle lace, gold and pearl embroidery) and lace coupling techniques of weaving. It should note they examined decorating decorative stitches, which decorated works of art, combining the bobbin and needle lace (*Figure 21*).

The study of materials, their structure and properties will help to use the natural qualities of the material for solving creative tasks in the future. For further reconstruction work, materials were collected for a more accurate and thorough study of small embroidery elements of historical works. Also, materials and illustrations of literary sources were used in scientific research.

The technical drawing, the final adjustment of the dimensions, the careful execution of the pattern, individual motifs were made-this made it possible to produce a skolk, i.e., a working embroidery pattern. Precision and accuracy in the skolk production were necessary for the high-quality performance of the work of art.

The lace motifs of the branches (*Figure 22*) and flower were woven on bobbins: the running pair with linen filaments, 6 share pair and the filigree “rope” with gold filaments. The lace was made in the coupling technique of weaving. The pattern was created by a cloth without the interweaving of extreme-lobed pairs. Woven motifs of twigs and flower were attached to the mesh. Along the contour of the plant motifs, a decorative cord was laid out – a plait, woven on bobbins. The floral lace motif was decorated with beads.

Plant motifs of pertussis lace are decorated with a chain of cantilevers, an ornamental strip of plant ornaments, which is made of embroidered squares, twigs with leaves in the technique of a double-sided white surface (*Figure 23*). The motifs of decorative twigs with leaves are made with a double-sided white smooth into a split, on one side of which there are embroidery borders in the ‘set’ technique, ‘satins’ in the form of rhombus and squares using white silk.

It was important to study the embroidery samples on the material of the future work of art-linen fabric. This work is necessary for select and determines the optimal number of filaments required to perform the length and width of the stitch of a definite type of artistic embroidery.

During recreating the old embroidery, the technological sequence of execution of the work stages was applied:

1. Performing a preliminary smooth roller (*Figure 24*).
2. Calculating, pruning, pulling out the filaments, twisting the mesh.
3. Twisting the cord of gold filaments.
4. Execution of one-sided, two-sided smooth surface, vestibule seam, “rhomb” satins, “punk” banners, sewing on the net, cord outline of the lace motif and edging with a rope (*Figure 25*).

5. Execution of diagonal stitches on the intertwined net of the upper cutting with gold filament. Laying out a plant ornament from decorative cords along the contour of the central upper cutting (*Figure 26*).

In the examples of combining lace and embroidery discussed above, small lace motifs were first woven. Then they were combined with the embroidery into a single composition. The technological features of the execution of needle lace in the fillings of lace plant motifs are of particular interest. In woven floral ornaments, lace fillings can be manufactured on bobbins, but the fillings using needle lace are exceptional and unique. A needle is a delicate tool, so the lace turns out to be airy and elegant. This technique is mainly used for creating jewellery, lace trim elements of clothing and interior items. In the State Russian Museum, a work of applied art from the late 19th century, combining a combination of whooping and needle lace. In the process of reconstruction (renovation) of the old lace of the coupling weaving technique, it was found that the fillings were made with needle lace.

The closed symmetrical composition of the plant ornament is an elegant flower bush. In the centre, there is a large hanging five-petalled flower. On both sides of it, there are expressive deciduous stumps resembling scallops creating the impression of rotation. They are echoed by the curved thin branches of a flower bush with whorls of a bizarre shape smoothly rising. The elegant fairy-tale flowers-seven-leaved flowers bloom on the branches. The linen cloth, which creates a pictorial motif, is enriched with a mixture of gold filaments. The petals of the flowers are decorated with holes (skidki). The background is made up of strands of hitch and a simple tulle lattice, which turns into a “Novoladozhskaya” one at the bottom. The lace pattern is clear and expressive thanks to the through tulle background, the holes (zakidki) and the narrow cloth with the relief of the metal filigree. A historical material collection and the comparative analysis made it possible to identify possible sources of the borrowed composition: in the album of S.A. Davydova *Russian Lace and Russian Lacemakers*, a lace pattern is shown in table XLIII (*Figure 2*) and annotated as lace, skolki's, filamentary, an old Russian, the town of Vologda. Property of M. I. Nadporozhskaya, in St. Petersburg (*Korshunova, 1979*); The album *Collection of Russian Antiquities* by V.P. Sidamon-Eristova and N.P. Shabelskaya shows a lace pattern (Table X) (*Figure 2*) and annotated as the sheet border. Pskov province (*Sidamon-Eristova & Shabelskaya, 1910*). Comparing the characters of the patterns and the execution technique, we can note their proximity and identity to the lace we are studying. In the lace studied, the cloth is complemented with a scanty ‘string’ of gold filaments which bifurcates and elegantly edges the holes (zakidki). Analogues of such lace were not found. The main pattern is made by a cloth with 11 bobbin pair in the interweaving of the extreme lobar pair where there is one filigree pair. After conducting research, weaving samples with the reconstruction of lost weaving techniques, making a skolki-drawing, lace was woven (*Figure 27*).

Next came the work on the execution of needle lace. For this purpose, the braided lace is removed from the whooping roller and fixed to the fabric which is tucked into the embroidery frame. The curly fillings of the bobbin lace motifs are made with needle lace elements in the section form including snovki, webs, penny and stars. A careful study of the material allows revealing the decorative and expressive nature of the filaments used in old lace.

Empty fillings of woven lace are decorated with embroidery of needle lace with gold filaments, in the centre of the cuts – large and small stars made of filament, sequins and beads

(Figures 28, 29). All the work, starting with the calculation of the grid and ending with the cutting execution, requires not only skill but also special attention, accuracy and patience.

Thus, the above list of works indicates a complex and time-consuming process of recreating the ancient technologies of embroidery and lace, which requires concentration of attention, mastery of execution and contributes to improving the professional level. During technological research of historical samples, it was possible to restore the lost techniques and types of techniques of weaving and embroidery.

Conclusion

Thus, the research activity on the revival, preservation and application of ancient embroidery and lace technologies is an important point in the training and education of future artists of applied art. The study of the integration of needle and whooping lace in works of applied art contributes to the development of a value-professional attitude to artistic and creative activity. The professionalism of an artist of applied art must necessarily reflect regional-historical, artistic-technological external and internal borrowings, colouristic and constructive traditions, research and experimental activities. A careful study of the material will identify the decorative and expressive nature of the filaments used in old lace. The study of the features of their structure and properties will help in the future to use the natural qualities of the material in the course of solving artistic and creative tasks. The combination of needle and bobbin lace in works of applied art allows you to emphasize the richness of ornamental solutions and decorate textiles using ancient technological techniques of lace weaving and embroidery. Artistic and creative orientation to the activity is a necessary condition for the harmonious development of personality and readiness to create highly professional works of art with artistic embroidery and lace.



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Appendix



Figure 1. Ball Gown. 1890s. St. Petersburg, workshop of A.T. Ivanova. State Hermitage Museum



Figure 2. Fragment of a ballroom dress. 1890s. St Petersburg, workshop of A.T. Ivanova. State Hermitage Museum



Figure 3. Ribbon lace with needle fillings



Figure 4. Lace motif with needle fillings



Figure 5. A fragment of a curtain with patterns in the floral motifs form. France. The end of the 19th century. Len. The diameter is 90 x 200 cm. Ribbon bobbin lace, needle lace. Clelia Traini's private collection



Figure 6. A fragment of a tablecloth with patterns in the rose form. Italy. 19th century. Cotton. The diameter is 90 cm. Bobbin lace, Venetian seam. Clelia Traini's private collection



Figure 7. A fragment of a square tablecloth. Italy. 18th century. Cotton. 150 x 150 cm. Pertusis lace, English white surface. Clelia Traini's private collection



Figure 8. A fragment of border lace. Italy. Early 19th century. Linen. 1500 x 38 cm. Clelia Traini's private collection



Figure 9. Square tablecloth. Italy. 17th and 18th centuries. Linen. 1.35 x 1.35 m. Clelia Traini's private collection

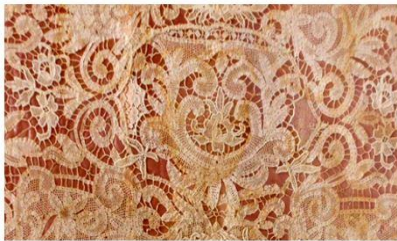


Figure 10. A fragment of a pink bedspread. France. The 17th and 18th centuries. Linen. Clelia Traini's private collection



Figure 11. A fragment of a pillowcase with firmware. Spain. The 17th century. Linen fabric, State Hermitage Museum

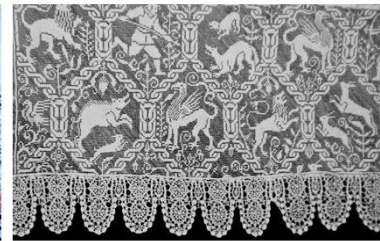


Figure 12. A valance with motifs depicting hunting scenes. Embroidery with linen threads on a fillet net. The edge of bobbin lace

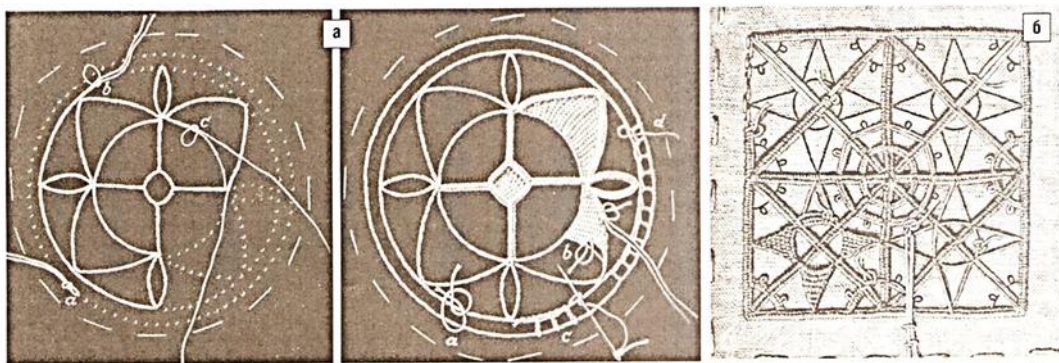


Figure 13. Technique of sewing round (a) and square (b) motifs



Figure 14. Examples of reticella lace motifs

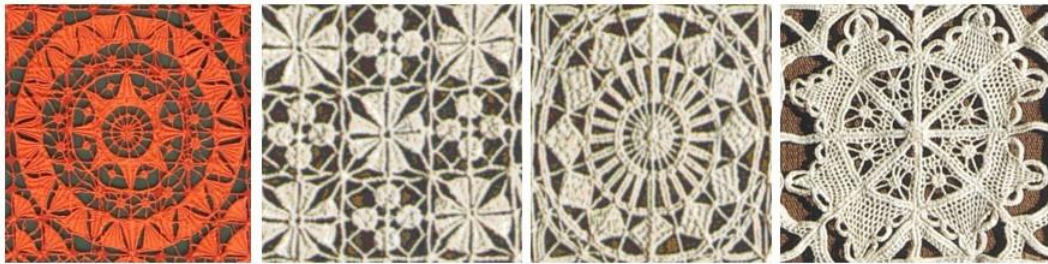


Figure 15. Examples of lace motifs: “old guipure”, “soap bubble”, “dream motifs”, “Vologda glass”



Figure 16. Tabletop with bobbin and needle lace motifs “Vologda glasses”

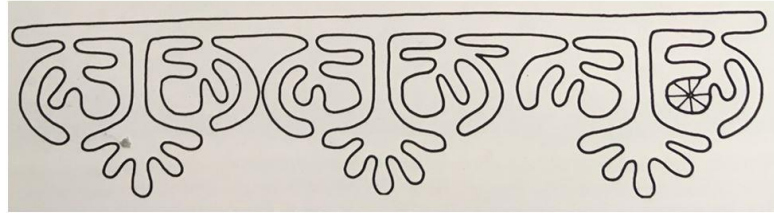


Figure 17. Figure-diagram. The end of the towel. The mid-19th century. Ryazan province, Mikhailov Town



Figure 18. A fragment of the Vologda valance, embroidered in the technique of “Vologda glasses”



Figure 19. Fragment of the execution of the sample embroidery “Vologda glass”

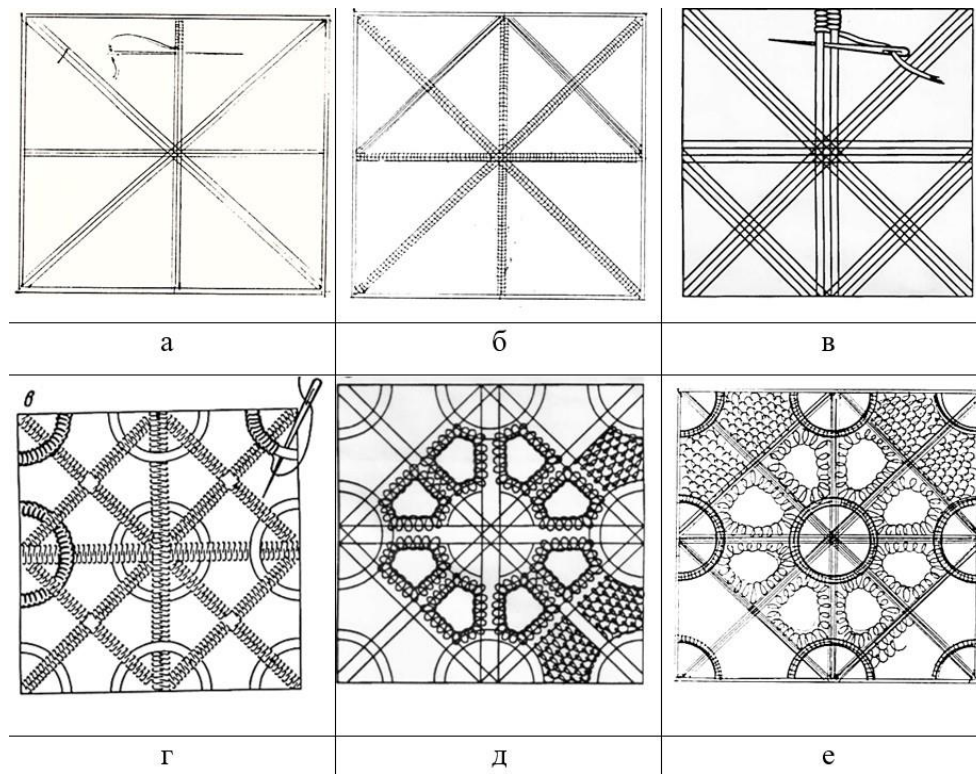


Figure 20. 'Vologda glass'. Stages of implementation



Figure 21. The combination of the bobbin and needle lace with beads (detail)



Figure 22. The branch motif. Lace of the coupling technique of weaving. Linen and gold threads



Figure 23. Plant motifs of pertussis lace, decorated with a cantilever's chain, an ornamental strip of plant ornaments made of embroidered squares, twigs with leaves in the technique of double-sided white smoothness



Figure 24. Execution of a preliminary smooth roller along the contour of the central upper cutting



Figure 25. Embroidered decor in the technique: satins in the form of "rhombs", "punk" banners, sewing on a grid tracing lace motif with a woven cord and edging with a rope



Figure 26. Fastening of the twisted gold cord along the contour of the lace motif and the central pearl cutting



Figure 27. Weaving lace with floral ornaments. Coupling technique of weaving



Figure 28. The implementation of embroidery in the technique of needle lace, cutting it from thread



Figure 29. Fragment run-embroidery in the technique of needle lace, great cutting flower from thread