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# Ukrainian Folk Ornaments in Modern Knitting

## *Ukrajinski okrasni motivi v sodobnem pletenju*

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### Abstract

National arts and crafts are not only the skills of an individual nation but an ethnic phenomenon that has unique features and serves as a source of information on national history and culture. Decorative and applied art in Ukraine combines the traditions and techniques of manufacturing and decoration, which have been developed and passed down from generation to generation. It has a clear national identity and numerous regional differences in ornamental motifs, compositions and favourite colours. Therefore, the Ukrainian folk art has a significant potential and is a source of ideas in creating modern clothing as well as interior items. Embroidery as a way of creating ornamental motifs on a textile material using various techniques is a common process for decorating clothes and interiors for the Ukrainians. Today, ornamental compositions of embroidered folk textiles could be transmitted into modern clothes using various technologies. However, the use of a knitting machine allows creating a pattern during the item production. The ornament transformation into a pattern for knitting can be carried out with graphic software by creating a grid with a cell size similar to the loop size of a knitted structure for corresponding interlooping. A number of clothing and interior items with ethnic motifs was created using the capabilities of flat knitting machines within the masters programme "Knitting Technology and Design" at the Textile Technology and Design Department of the Kyiv National University of Technologies and Design.

Keywords: national clothes, folk pattern, ethnic style, knitting, jacquard knitting, miss knit

### Izvleček

Narodna umetnost in obrt ne predstavljata samo veččin posameznega naroda, temveč sta etnični pojav, ki ima edinstvene značilnosti in je vir informacij o zgodovini in kulturi naroda. Dekorativna in uporabna umetnost v Ukrajini združuje tradicijo in tehnike izdelave in okraševanja, ki so se razvijale in prenašale iz roda v rod. Ima jasno nacionalno identiteto in številne regionalne razlike v okrasnih motivih, kompozicijah in najljubših barvah. Zato je ukrajinska ljudska umetnost velik potencial kot vir idej za ustvarjanje sodobnih oblačil in izdelkov za notranjo opremo. Vezenje je pri Ukrajincih kot način ustvarjanja okrasnih motivov na tekstilih z različnimi tehnikami pogost postopek pri okraševanju oblačil in notranjih prostorov. Danes se okrasne kompozicije ljudskega vezenega tekstilja prenašajo v sodobna oblačila s pomočjo različnih tehnologij. Uporaba pletilnika omogoča ustvarjanje vzorca med samo izdelavo pletenine. Pretvorbo okrasnih motivov v vzorec za pletenje omogoča grafična programska oprema z izdelavo mreže z dimenzijami celic, podobnih zanki pletene strukture za ustrezno vezavo. V okviru magistrskega študijskega programa „Tehnologija pletenja in oblikovanje“ na Oddelku za tekstilno tehnologijo in oblikovanje na Nacionalni univerzi za tehnologije in oblikovanje v Kijevu so bila z uporabo zmogljivih ploskih pletilnikov ustvarjena različna oblačila in izdelki za notranjo opremo z etničnimi motivi.

Ključne besede: nacionalna oblačila, ljudski vzorec, etnični slog, pletenje, žakarsko pletenje, založena vezava

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# 1 Introduction

In the modern world, where cultural peculiarities of different nations and regions are smoothed out, the issues of reviving and developing the best national traditions are especially relevant. Traditional arts and crafts are the merits of people who preserve their spiritual experience and identity. The importance of national textiles for revealing people's worldview, their moral values and their own styles cannot be overestimated [1, 2]. Therefore, the recognition, preservation and development of national traditions should be an integral part of the new generations' education. National traditions instil love for the native land, develop the understanding of the need to study ethnic history and of the outstanding nation achievements. Therefore, ethnic folk textiles enrich the creativity and efforts of designers, being an invaluable source of ideas for modern textiles and clothing creation [3–5]. Modern clothes with ethnic motifs not only create our appearance and image, but also represent the inner world of people. They are a means of nonverbal communication in the society [6].

The Ukrainian folk textile heritage is an important part of the best national traditions, the art of individual regions of the country that contains various ideas aimed at preserving the national identity [77]. People have been creating products for many years, satisfying not only their daily practical needs, but also the aesthetic ones. The Ukrainian folk decorative and applied art is a special branch of the artistic activity that has a distinct national identity, and contains practical, ceremonial, ideological, semantic and educational functions. It is closely connected with the history and national traditions of regions and testifies the artistic endowments of folk artisans.

An important component of the Ukrainian folk art is embroidery, i.e. the process of decorating clothes and interiors. Embroidery is the artistic source that determines the specific character of the Ukrainian spiritual culture and the path to the national self-preservation. The artistic richness of embroidery is determined by numerous differences formed under the influence of historical and geographical conditions. Unique motifs and ornaments, colour scales and specific techniques have been formed in each region of Ukraine. With the help of embroidery, clothes and household items have been transformed into unique and inimitable works of art [8, 9]. The Ukrainian folk costume combines the art of decorating, patterning and sewing. The variety of forms

and imaging, the expediency of constructive and compositional solutions, the decor uniqueness, and the inseparable connection of these remain an inexhaustible source of creative ideas.

Apparently, this is the reason for fashion designers to constantly refer to the Ukrainian folk art for innovative ideas or a source of inspiration [10, 11]. They provide national characteristics into modern fashion that organically fit the world tendency [12]. The ethnic style is relatively common not only to the Ukrainian modern fashion, but throughout the world and especially to the European fashion [13].

The use of folk art motifs is popular today for interior design as well. The reference to folk interior solutions creates functional, aesthetic and comfortable housing for modern life. The ethnic Ukrainian houses have been decorated with embroidered towels and pillowcases, patterned carpets, paintings on the walls and furniture, etc. Such samples of national crafts create a wide field of activity for a designer in their introduction into the modern residential interior [14]. The ornament is an important element of the national Ukrainian style. The selection and alternation of patterns are organised in such a way that the kinship of symbols, unity of the world perception embodied in magical pattern amulets can be seen [10]. The embroidery symbols have never been random, conditional, since each element has its own purpose. They come from our ancestors, their knowledge and views on the nature [15]. In this case, the choice of colour is symbolic as well, which is considered a charm in combination with the ornament [16]. From the other side, symbolism is very diverse by regional grounds; therefore, it is an inexhaustible creative source for modern art [11].

The Ukrainian ethnic elements, which have been improved over the centuries and have absorbed the peculiarities of the centuries-old culture, give modern clothing and interior special flavour of those centuries. They increase their artistic emphasis and consumer attractiveness, as well as the national and regional identity [17].

## 1.1 Historical notes

Embroidery plays the leading role in the decoration of Ukrainian folk clothing, has a symbolic meaning of amulet and characteristic features in colour, technique and composition, honed over the centuries. The first mention of embroidery is known from the 4<sup>th</sup> century BC [18]. Since then, artistic and stylistic stitching has been formed, the sign system symbol-



ising the forces of nature and the structure of the world has emerged. There are motifs that have lived in embroidery for centuries, reminiscent of pagan beliefs. With Christianity, new art forms appeared. In particular, gold artistic stitching reached a high level in the Kyivan Rus and spread far beyond borders. Such products were mostly used by priests. Studies indicate that embroidery was a favourite art form among both the nobility and common people, and that the seamstresses mastered the gold stitching technique, creating rich and varied pattern texture. Information about folk embroidery is known only since the 18<sup>th</sup> to the beginning of the 19<sup>th</sup> century, since the study of works of art began as late as in the 1980s. In fact, the first results of the study of Ukrainian embroidery were summarised in the work

[19], which has been republished several times, and contains ornament samples and technique recommendations. The peculiarity of folk embroidery is its striking difference according to ethnographic regions, i.e. Middle Dnieper, Polissya, Carpathians and Prykarpattia, Podillya and South (cf. Figure 1). There were special ornaments, compositions and techniques in each region during the historical and cultural development in Ukraine. The colour scheme also depended on the Ukrainian region. Our ancestors created products that differed in the playful colours of Carpathian mountain valleys or Podillya plains, or their monochrome combination. The colour scheme of embroidery also depends on the purpose of the product – festival or casual. According to recent studies, the choice of colour is a factor that creates



Middle Dnieper



Carpathians and Prykarpattia



Polissya



Podillya

Figure 1: Embroidery of different regions of Ukraine (19<sup>th</sup>–beginning of 20<sup>th</sup> century) [18]



different emotions. Therefore, the choice of colour is an important factor in the clothes production [20]. Folk embroidery is reproduced worldview with artistic means. The Ukrainian embroidery is characterised by a combination of geometric and floral ornaments. The geometric elements such as rhombuses, rosettes and cruciform figures became the basis of the East Slavic pattern. The archaic forms of ornaments, e.g. miracle birds, griffins, outlines of a female figure are characteristic of the embroidery of Chernyhiy, Poltava, Podillya. In the 19<sup>th</sup> century, the interest in floral ornamentation increased [21].

The Hutsul region (Carpathians) attracts special attention since here, each district, even every village, has its favourite range of colours. The majestic beauty of the Carpathian nature contributed to the development of unique fine art. The Hutsul region is characterised by geometric ornaments and contrasting colour comparisons, whereas massiveness and densely placed patterns are typical of the Hutsul antic folk embroidery [22].

In the 20<sup>th</sup> century, the tradition of embroidery continued with a wide range of masters involved in the artistic life of the country, and their works were successfully exhibited in Berlin, Prague and London [18]. Experimental workshops were created where folk seamstresses and artists were searching for new forms and artistic styles. In the modern world, the Ukrainian embroidery is developing in the field of traditional household, amateur art and artists' creativity whose activities are aimed at studying the best embroidery samples and preserving its classical heritage (cf. Figure 2).

### 1.2 Embroidery techniques

Embroidery was placed into strictly defined places of clothing – sleeves, armpits, cuffs, hem of a shirt, since canvas ends were considered the best places for the penetration of evil forces [21, 23]. The beauty and perfection of embroidery largely depend on the execution technique. More than a hundred stitches are counted in the Ukrainian embroidery. These are various stitches: the top stitch is made on the drawing put on a cloth, the counting stitch is made by counting cloth threads. The oldest include “zavolikannia”, “zanyzuvannia”, “nyzyna” [8], “twisted stitch”, variation of “flat stitch”. Cross stitching appeared in Ukraine at the beginning of the 19<sup>th</sup> century. This stitch was quickly mastered by people and displaced more complex techniques from everyday life.

The names of many techniques come from the means of performance, e.g. “cutting”, “punching”, from the item embroidered, e.g. “towel stitch” for towels, or from place names, e.g. “Old Kyiv stitch”. In some cases, the technique name is associated with the appearance of the stitch, e.g. “chicken ford”, “nightingale eyes”, “buckwheat”, “oatmeal”. Most techniques are common in all regions of the country; however, each area has its favourite techniques and its traditional colour scheme. Thus, “nabiruvannia” is widespread in the Kyiv region, “lyshtva” in the Poltava region, and “zanyzuvannia” in the Volyn region. Stitches, spread almost all over Ukraine, are often made in different colours, hence creating their diversity. Folk embroidery is characterised by a variety of techniques in one product, which can contain up to 10–15 techniques at a time [9].



Figure 2: Ethnic clothing in 1980s



The hemstitch has been used in decoration for ages. This openwork stitch has decorative holes of a certain size. This is one of the most interesting, most ancient and simplest ways of embroidery. The pattern is formed due to the contrast of openwork holes and covers. It had both practical and decorative significance. The hemstitch was used for decorating women's and men's clothing, bed linens, tablecloths, towels etc., and for connecting different parts of clothes instead of seams. It was used for decorating pockets, neck, sleeves and skirt hems. White or light coloured threads (grey, pink, blue) are used for white fabrics and close to the tone if the fabric is coloured. Ornamental compositions can be both geometric and plant-geometric.

The hemstitch is usually made on a fabric from which threads are pulled out in one direction and the rest of the threads are combined in different ways into bundles ("twigs") that create patterns. The hemstitch is usually combined with different stitches, e.g. "nab-iruvannia", "nyzyna", "zanyzuvannia", "cross stitch", "flat stitch", which enrich the pattern [24].

The hemstitch can be narrow and simple as well as complex, reminiscent of thin lace (cf. Figure 3). It is distinguished by type, technique, size and complexity. Depending on the formed components, there are the following types of hemstitch [25]:

- one-sided, when one side of the fabric strip with threads pulled out is embroidered, and double-sided when two sides of the fabric strip with threads pulled out are embroidered;
- simple and complex, containing one or more strips;
- narrow and wide (2 cm or more width is embroidered on the hoops).

### 1.3 Methods for creating ornaments on products

The development of modern technologies creates the conditions for obtaining decorative elements of embroideries using various methods. Following the hand embroidery tradition, machine embroidery can be used as well. It allows applying a pattern on different types of fabrics, clothing details even where other technologies are unacceptable. The main characteristic of machine embroidery is high-quality and aesthetic application of patterns, images and inscriptions on various textile materials. The machine embroidery technology compared to other methods allows creating an image in a clearly defined place, the embroidery being more stable and durable, even after repeated washing [26].

Printing is a well-known technique for decorating textile fabrics with the application of pigments, dyes or other related materials in the form of patterns. There is a number of printing methods that could be used for ethnic clothes decoration, e.g. block, roller, screen and heat transfer printing. These methods are used as a separate technological stage [4], which requires additional equipment, work force and premises.

Weaving is the oldest textile technique used to obtain interesting and intricate patterns in ancient times [27]. There are two main techniques of folk weaving in Ukraine, i.e. shuttle and sorting, which determine the nature of the ornament. The first is used for small patterns in the form of zigzags, obliques or rhombuses. The warp and weft threads in different directions of the covering create light and shadow tone transitions on the fabric surface. The sorting technique provides more opportunities for creating complex patterns on textiles. In addition



Figure 3: Hemstitch



to transverse stripes, there are geometrised motifs, e.g. rhombuses, stars, rosettes, stylised images of flowers, birds. This pattern technique prevails in the production of fabrics with straight contours [28–29]. Weaving is used in the manufacture of “zapasok”, i.e. a belt product, characterised by variety, sophistication and richness of artistic and aesthetic solutions. It has a significant variability in the combination of narrow ribbons with different thicknesses, in different rhythms of transverse-striped compositions, as well as shading – from warm, cold to contrasting colour range. Towels, tablecloths and carpets with the elements of the Ukrainian ornament are widely used for decorating interiors with weaving.

Knitting is one of the textile techniques that has the widest opportunities to create a variety of patterns and effects on fabric during its manufacture. The designed patterns are resistant to mechanical stress and weather conditions, and their quality depends generally on the quality of raw materials and the choice of colour. Changing the knitting machine gauge and the linear density of yarn, correspondingly, make it possible to create patterns from the finest ones to those simulating hand knitting. In addition, modern drawing design systems allow creating a variety of ornaments due to a different combination of local identity elements [30].

The first collections of knitted clothes in ethnic style were created in the last century (cf. Figure 4). A modern diversity of knitting equipment enables us to create both knitted goods with a small pattern repeat

and a pattern of unlimited repeat. The best places for folk decoration on modern clothes are the following: design of the neckline and collar, the top and bottom, the fasteners and sides, the waist and the pockets, etc. [31]. Thus, flat knitting machines with their knit-and-wear technology are the most perspective equipment. Details of different shapes can be knitted, with a pattern only in a certain part or throughout the whole length [21–23]. Such equipment has wide technological possibilities for any creative idea.

## 2 Materials and methods

The methods of a literary and visual-analytical review were used in the study of artistic decoration for Ukrainian folk clothes.

The reproduction of ornaments identical to the ornaments of traditional Ukrainian folk clothes was conducted by knitting. The knitted structures were made by openwork, jacquard, plated and miss knit. The developed knitted fabrics were used in children's and women's clothes as well as interior items. The ornaments are located in line with the tradition of embroidered folk products.

All knitted fabrics were produced on a 5-gauge flat knitting machine Brother, the technological capabilities of which allow making a pattern in a certain place of a product.  $31 \times 2 \times 2$  tex half wool yarn was used for jacquard knitting,  $29 \times 2 \times 3$  tex cotton yarn for openwork and interlooping with miss knit wales,



Figure 4: Knitted clothes in ethnic style in 1970s



while  $29 \times 2 \times 3$  tex cotton yarn as plated and 40 tex polyester yarn as ground were used for plated interlooping.

### 3 Results and discussion

The clothing creation with ethnic elements is an important part of the research work carried out at the Department of Textile Technology and Design. Students' involvement in their masters theses aimed at the study and development of arts and crafts contributes not only to their qualification as specialists in knitting, but also to the education of creative, active, initiative and of nationally conscious people with a strong intellectual potential, willing and able to work for their homeland prosperity. The main feature of folk decorative and applied arts and crafts is the understanding of creative work beauty. During the creation of ethnic collections, future specialists are exploring the design of arts and crafts, finding out the meaning of symbols' decoration, determining their influence on people and the environment. Such original work develops students' creative potential, their imagination and thinking. At the same time,

students show their knowledge capacity in the field of knitting equipment, production processes, inter-looping types etc.

The variety of knitted fabrics allows reproducing colour, openwork, textured effects in products. Thus, jacquard and plated weaves are widely used for colour pattern creation, as well as open and split weaves for making cloth with holes.

#### 3.1 Cross stitching in knitting

Cross stitching is a traditional technique for the Ukrainian folk clothes decoration. The usage of the cross-stitch pattern with square units is not very appropriate for knitting. The pattern transformation onto small sections that correspond to the loop size is the main task for the pattern creation in knitting. The loop is the main and smallest element of the knitted structure that is characterised by wale (W) and course (C) spacing. The knitted structure can be inscribed in a square only with equal W and C. It forms a rectangle in all other cases: horizontal for  $W > C$  and vertical for  $C > W$ . This is a factor affecting the shape and size of the ornament. Therefore, to display the real dimension ratio of the future ornament, the pattern should consist of rectangles,

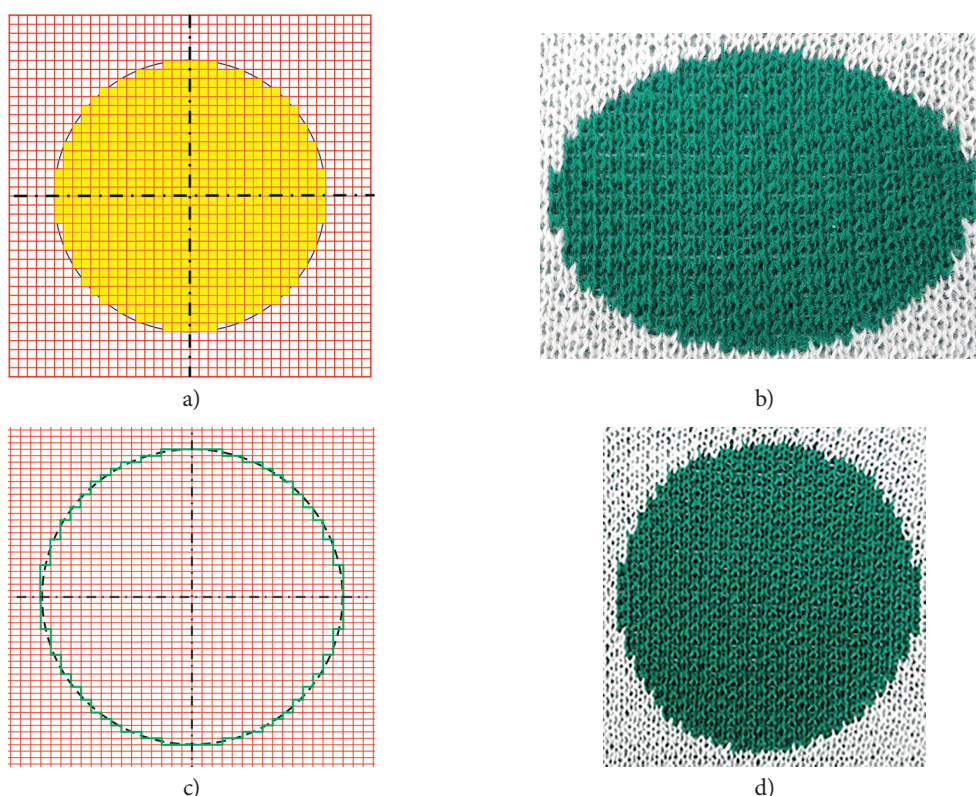


Figure 5: Circle in knitted samples



the size ratio of which is chosen according to the loop size. In this case, the knitting direction is an important factor.

To confirm this conclusion, a circle was chosen as the ornament unit for the jacquard sample. The pattern  $30 \times 30$  that forms a circle (cf. Figure 5a) with cross stitching turns into a horizontal ellipse (cf. Figure 5b) with 82 mm in width and 54 mm in height. It is proposed to use the applied graphics programs, e.g. CorelDraw, to reduce the time needed for pattern creation. It allows us to create a grid with desired cell sizes, superimposing it onto any original ornament. A grid with units  $W = 2.73$  and  $C = 1.78$  mm was used for the study. The circle (dashed line) with an 82 mm diameter was imposed on the grid and the outlines of the figure were drawn (green line) along the contours. In this case, the repeat size was 30 wales and 46 courses (cf. Figure 5c). The pattern corresponds to a circle in the knitted sample (Figure 5d). This method greatly simplifies and speeds up the

cross-stitch ornament implementation in knitting and was used in this work (cf. Figure 6).

It is very exciting to implement the traditional Ukrainian ornament into children's clothes. It should be noted that the choice of ornaments for children has always been very important. Ornaments that are mostly used in the Ukrainian children's folk costumes can be divided into two main groups, i.e. geometric and stylised figures.

A tree branch is considered one of the main symbols in the Ukrainian children's folk clothes. It has a special meaning, namely a tree branch is a symbol of the beginning of life. The branch frequently appears with berries, which symbolise the birth of future generations. A rose, as a symbol of beauty, is often depicted on girls' dresses. Generally, girls' shirts are embroidered with ornaments with phytomorphic or Scythian-type motifs. Geometric figures (rhombus, rectangle and circle) have been considered as ornaments for boys' clothes, rhombus and rectangle being



Figure 6: Cross-stitch pattern in knitted structure



Figure 7: Knitted clothes for kids (author: Oksana Zvereva)



symbols of wealth and fertility. In most cases, the ornament is adorned with moustaches that reflect male courage.

Both vegetative and geometric patterns from Ukrainian embroideries of different regions were chosen. A two-colour incomplete jacquard was used for the children's collection. All fabric samples were produced in two colours, i.e. red and white. All ornaments were produced in two variants of embroidery imitation, i.e. red on white and white on red (cf. Figures 6 and 7).

As it has already been mentioned, the choice of an ornament has a tremendous value and is considered an amulet. Pysanka, for example, is the Ukrainian name for an Easter egg, ornamented with different folk patterns and motifs using wax and colourful dyes (cf. Figures 8a and 8b). The word “pysanka” originates from the Ukrainian verb “pysaty”, which means “to write”. The ceremonial egg decorating has a long history in the Ukrainian culture. Most motifs that survived to modern times are symbols of communication between our ancestors and nature. With these symbols, they protected themselves from evil forces. [32]

The ornament proposed for the interior goods decoration consists of two motifs. The first and the main one is a bird (cf. Figure 8c), which is centrally located.

The second one is the cross (cf. Figure 8d) which is located on the edge (cf. Figure 9). The bird is a symbol of birth, fertility, abundance. It is a semi-underground, semi-heavenly being, a symbol of love, loyalty and harmony. In Christianity, the bird is a symbol of the ascension to God. The cross is one of the sunny signs, the symbol of the Universe, the four sides of the world, four winds and four seasons of the year. It comes from the schematic ancient image of a bird, as the sun was a bird flying in the sky. The cross is also a symbol of life and immortality. Two colours were chosen for production, i.e. brown and ivory, symbolising reliability, devotion, stability.



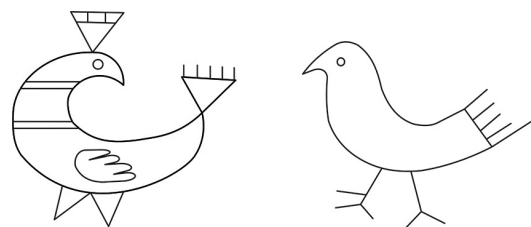
Figure 9: Interior knitted goods (author: Alina Kozhukhar)



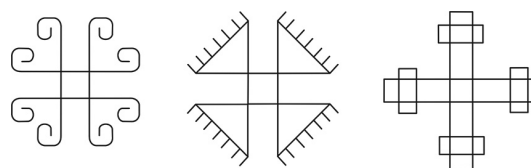
a)



c)



b)



d)

Figure 8: Pysanka with different motifs



### 3.2 Hemstitch in knitting

The variety of knitted fabrics allows reproducing not only coloured patterns, but also lace and textured effects. Thus, jacquard was used in the above mentioned work, as it reproduces the colour motifs of cross stitching very successfully. It is more interesting to create the hemstitch effect in knitwear. Several variants of interlooping can be used to reproduce such embroidery:

- plaiting, in which, according to the pattern, some loops are formed from two threads, and others from only one considerably thinner thread (cf. Figure 10a);
- openwork made by transferring certain loops to neighbouring needles (cf. Figure 10b);
- miss knit with switched off needles (cf. Figures 10c and 10d).

One-colour yarn was used. It corresponds to the principle of hemstitch formation in the Ukrainian folk embroidery. The yarns of different linear densities were used for the plated fabric and different raw materials to enhance the textured effect. The folk hemstitch was reproduced into women's dresses (cf. Figure 11) in many ways.

## 4 Conclusion

The ethnic style development in modern fashion is a relatively common trend throughout the world. The Ukrainian decorative and applied art as the ability of people to demonstrate the national culture, thinking and views is the inspiration source for the creation of modern clothes.

A promising way to reproduce folk motifs is knitting, which allows creating a pattern during the clothes production without an additional finishing process and technological transitions. The pattern placement is possible both, on the whole plane of the fabric and only on a certain place of a product for details. For this technique, the ornament transformation onto the smallest areas, i.e. the loop size, was successful. The use of modern pattern design systems permits creating ornaments of various compositions. The variety of knitted interlooping allows the reproduction of colour, openwork, relief effects in ornaments identical to the ornaments of traditional Ukrainian folk embroideries.

The knitted structures based on openwork, jacquard, plated and miss knit fabrics that reproduce the cross



a)



b)



c)



d)

Figure 10: Knitted hemstitch





a)



b)

Figure 11: Dress (a – author: Anna Konotop; b – author: Anna Kravchenko)

stitch and hemstitch folk patterns were developed. The developed knitted fabrics were used in children's and women's clothes, as well as for interior decoration. The use of national elements of the folk costume in the development of modern clothing gives them special colour, artistic expression, identity, consumer appeal. It is not only the source of centuries-old culture. It helps restoring historical and spiritual memory focusing on the aesthetics depth of the Ukrainian ethnicity. The use of ethnic elements not only expands the product range but also promotes national traditions, which are one of the sources for education to younger generations. The spiritual birth of a person occurs through the assimilation of the national culture, age-old traditions and customs. Involving students in the study of arts and crafts contributes to their education as creative, active, nationally conscious persons. It also leads to the expansion of professional skills for future textile technologists.

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