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## **Texture decoration: from folk costume to fashion and interior design**

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### **Rezumat**

#### **Decorarea texturii: de la costum popular la îmbrăcăminte și design interior**

Articolul este dedicat procedurii utilizării încrețiturilor sau saielelor pentru formarea cutelor în procesul decorării textilelor, în scopul reliefării texturii. În lucrare sunt sistematizate informații despre istoria dezvoltării crețurilor sau cutulițelor ca tehnică decorativă, este întreprinsă clasificarea designului lor, sunt argumentate recomandările privind parametrii geometrici ai încrețiturilor specifice textilelor de interior. Pentru sistematizarea și clasificarea tehnicilor de croire și coasere a bluzelor au fost aplicate abordări descriptive și istorice.

Urmare a analizei surselor literare și a exponatelor muzeale, s-a constatat că îndoiturile textilelor cu rol de creare a încrețurilor figurative geometrice în câteva registre sunt cunoscute în Europa încă din secolul al XVI-lea și au fost folosite în decorarea costumelor tradiționale din Ucraina și Anglia. Începând cu anii 1970, tehnica de decorare a vestimentației și a textilelor de interior cu ajutorul cutulițelor a căpătat popularitate. Trecerea în revistă a modelelor de îmbrăcăminte decorate cu cutulițe a demonstrat că diferiți designeri practică încrețuri dintre cele mai comune, precum cusutul peste cutulițe, iar figurile mai frecvente sunt romburi și coșulețul. Benzile cu cutulițe decorative sunt dinainte în partea de sus a bluzei, jos la mâneci și, cel mai frecvent, în partea superioară a fustei. Acest principiu este utilizat și la decorarea pernelor, draperiilor, cuverturilor și a fețelor de masă și au rol funcțional în ajustarea părții superioare a draperiilor.

Autorii au elaborat o clasificare proprie a cutulițelor în funcție de designul și caracteristicile tehnologice ale acestora: conform metodei de execuție, formei și dispunerii încrețiturilor tipului de cusătură pentru formarea acestora, materialelor utilizate la configurarea lor.

**Cuvinte-cheie:** textură, design, decor, cutulițe, textile de interior, costum popular.

### **Summary**

#### **Texture decoration: from folk costume to fashion and interior design**

The article is devoted to the problem of decorating the texture of interior textiles with smocking. The article systematizes information on the history of smocking development, develops a classification of smocking designs, and substantiates recommendations on the geometric parameters of smocking on interior textiles. The paper uses descriptive and historical approaches to systematize and classify the types of smocking designs.

As a result of the analysis of literary sources and museum exhibits, it was found that smocking as a figurative gathering of the fabric into several rows of assemblies have been known in Europe since the 16th century, and were also used in folk costumes of Ukraine and England. Since the 1970s, smocking has gained popularity as an element of clothing and interior textiles embellishments. As the review of clothing models with smocking of various designers showed, the most common in clothing is embroidery on top of the assemblies, Waffle and Basket smocking. Smocking is placed on the bodice, on the top of the skirt, on the bottom of the sleeves. In interior textiles, smocking is placed mainly in the upper part of curtains, on pillows, on bedspreads, on tablecloths. An author's classification of smocking has been developed according to their design and technological features: the method of execution, the shape and arrangement of cells, the type of stitch, materials for the formation and decoration of assemblies.

**Keywords:** texture, design, embellishments, smocking, interior textiles, folk costume.

## 1 Introduction

Modern design offers the use of various types of textile materials and a variety of embellishments. Various types of finishing not only decorate the textile product, but also strengthen and enrich its composition, the artistic and figurative design of the costume.

According to [15], the types of clothing embellishments are divided into the following groups: 1) flat decoration; 2) three-dimensional decoration; 3) additional accessories.

Embellishments obtained by performing all types of embossed seams, folds, assemblies, smockings, draperies, pleats, corrugations, folds, decorative stitches are widespread and used in various types of textiles. They can be a means of creating a shape, dividing the shape into parts, a way to connect mold elements, etc. and are inextricably linked to the design of the product and largely determine the material consumption for the product. Draperies, smockings, pleats are often the center of the product composition and make it possible to get a product or parts of it in a soft shape. The most expressive embellishments of this group look on smooth-colored fabrics, thin, plastic fabrics are recommended for their manufacture. The dependence of design parameters on material properties for finishing details, such as shuttlecocks, is presented in the study [29].

Based on the research conducted in the article [12], the existing varieties of textures of the materials for the manufacture of clothing and other products, according to various criteria, were systematized and classified. An important indicator of the aesthetic quality of the product is the nature of the surface pattern of the material. Convex, concave, flat, polyline, wavy, ribbed, etc. surfaces are distinguished by geometric features [13]. Artificial textures are obtained by technological surface treatment, which changes the primary material and assigns new visual-plastic qualities to it. There are manual, mechanized (automatic) and combined methods of making textures. The first method includes embroidery with threads, beads, sequins, ribbons; smocking; applique; inlay; painting; knitting; weaving; felting; origami; three-dimensional elements with filling; patchwork; quilting; burning, etching, etc. A characteristic feature of the manual production method is its high labor intensity, so it is mainly used for creating exclusive products, reconstructing historical costumes. As revealed in the article [16], leading

fashion houses use different fabric textures to achieve creative looks.

The article [8] systematizes the technologies of manufacturing several types of smockings and visualizing smocking in 3D design of silk products.

A study [27] is devoted to the problem of ensuring the quality of embroidered semi-finished products in the use of semi-automatic embroidery machines. It is noted that the correct choice of method and material for stabilizing textiles is important for quality.

An important contribution to the development of methods for decorating textiles is the study of ornamentation of knitted fabrics, presented in the article [11]. The study [21] of the ornamentation of traditional Slovenian Bela Krajina towels using the screen printing technique is of interest. Attractive aspects of using beads in decorating the folk costume of Ukraine are presented in article [6]. The problem of producing nanotextile components is covered in article [2], and the problem of developing clothes from smart textiles is considered in article [20]. Article [14] deals with the problems of creating various tectonic forms of clothing from textile materials with different physical and mechanical properties. Article [3] is devoted to the study of the properties of interior textiles. A number of studies are devoted to methods for determining the properties of textile materials that are important for choosing a decoration technology. These are, in particular, weight [29], bending stiffness [7], and draping [17].

It is relevant to develop scientifically based recommendations for the classification of smocking varieties for fashion and interior textiles.

**The purpose of the study** is a systematization of information on the history of smocking development, classification of smocking varieties, as well as the development of recommendations on the geometric parameters of smocking on interior textiles.

## 2 Research methodology

The paper uses descriptive and historical approaches to systematize and classify the types of smocking designs.

### 2.1 History of the development of smockings as a three-dimensional embellishment of textiles

Smocking is a traditional type of garment embellishment, when small folds, which are formed as a result of picking the fabric, are con-

nected to each other by decorative stitches. Some types of smocking allow getting an elastic fabric. In Renaissance dresses, smocking decorated the cuffs, the sleeves and necks (Fig. 1, a). We consider a figured tidy Pukhlyky, inherent in the Ukrainian women's shirt, to be a kind of smocking (Fig. 1, b).

On dresses of the 1830s and 1840s, smockings were used for decoration of the bodice, skirts, and also created an adjacent silhouette due to assembly in the waist area (Fig. 2, a). At the end of the nineteenth century, dresses with smocking were popular in Europe. Smocking embellishments were used both for formal dresses and for home "tea" dresses (Fig. 2, b).

According to the manufacturing technology as can be seen in Fig. 1, Fig. 2, smocking of the 16th century was assembled in several rows, and in the manufacture of smocking in the 18th-19th centuries, embroidery was used on top of the assemblies, and "waffle" smocking also appeared during this period.

Smocking was also common in the eighteenth century in Central and Southern England for decorating men's smock-frock work shirts made of heavy linen or fine wool (Fig. 3, a, b). According to the manufacturing technology as can be seen in Fig. 3, b, the smocking on such shirts was embroidery on top of the assemblies. Embroidery on assemblies is also inherent in the Ukrainian traditional shirt (Fig. 3, c). In modern literature, this type of smocking is sometimes also called "Hungarian embroidery".

Since about the 1920s, dresses with "Waffle" smocking and a flat-lying collar have become an indispensable component of the children's wardrobe of the royal families of Europe [26]. In the Vogue, Little Vogue, Vogue Pattern magazines from the early 1900s to the present day, models of clothing with smocking are printed. Smocking was located mainly in the area of the shoulder, structural belt of children's and women's dresses. In the period 1930-1960, the "Waffle" smocking predominate, located in the form of a horizontal assembled strip, as well as a shaped strip parallel to the neckline (1960s). On children's dresses of the 1970s, smocking in the form of embroidery on top of the assemblies is located along the entire bodice to the waistline. Noteworthy is the dress by designer Angèle Delanghe in a photo from British Vogue, 1943, made of polka dot fabric, decorated with "waffle" smocking on the front detail. The

cover of the Vogue Pattern 1958 is decorated with sketches of dresses with smocking and a scheme of "Waffle" smocking execution.

Smocking was a popular embellishment for women's clothing in the 1970s and 1980s (Fig. 4). During this period, we observe mainly "Waffle" smocking on women's dresses and blouses.

A surge in the popularity of smocking has been observed since the early 2000s. The monochrome collection Broken shadow (2008) by the Swedish design brand Helena Horstedt is decorated with expressive, textured smocking. Products of this collection are decorated with the main types "waffle" and "basket" smocking, as well as derived types, for example, with markings in a curved grid, with variable sizes of elements.

In the early 2000s, products with smocking were presented by the fashion houses Jean Paul Gaultier (SS 2010), JC de Castelbajac (PF 2014-15), Chanel (FW 2015).

## **2.2 Analysis of fashion trends - the use of smocking in creative collections of interior textiles and clothing**

Modern designers of apparel and interior design widely use smocking of various types as a clothing embellishment. In particular, in the Gucci Fall 2020 ready-to-wear collection [18] the sleeves of men's shirts, the bodice and bottom of the sleeves of women's dresses are decorated with smocking; the designer also used embroidery on the assembly.

In the collections of the 2021 season, models of clothing with smocking were presented by designers Kiko Kostadinov, Marques Almeida, Louis Vuitton Fall 2021 Ready-to-Wear. In the Kiko Kostadinov spring 2021 Ready-to-Wear collection [28] "basket" smocking is located along the vertical lines of a woman's dress, as well as randomly on a woman's skirt. The dress from the Marques Almeida Spring 2021 Ready-to-Wear collection [10] is decorated with Flower smocking on the entire surface of the products. In the Louis Vuitton Fall 2021 Ready-to-Wear collection [19] smocking is arranged horizontally or at a slight angle to the horizontal at the bottom of the skirts. Smocking with a cord, decorated with fine-tuned ruffles is used.

Products with smocking are widely represented in the collections of designer Christian Lagerwaard (Fig. 5, a, b). The designer used mainly Basket and Rose smocking, as well as the chaot-

ic arrangement of the folds of the fabric. Basket smocking is arranged in a single row along the middle of the back.

Based on the Waffle smocking, a textured solution is built for bodices, skirts and sleeve bottoms of the Haider Ackermann Spring 2017 Ready-to-Wear collection [1]. In the collection of the Iranian designer Jean Louis Sabaji F/W 2017, a dress with Waffle smocking is decorated with beads at the points of the clips.

As you can see in the photo (Fig. 5, c), a conical skirt with smocking is made with an increase in the size of the smocking cells from the waistline to the bottom line.

The international brand Charlotte Sy Dimby specializes in the production of elegant children's clothing in the French style with handmade smocking and embroidery on top of the assemblies (Fig. 5, d)

As the review of clothing models with smocking of various designers showed, the most common in clothing are embroidery on top of the assemblies, Waffle and Basket smocking. Smocking is placed on the bodice, on the top of the skirt, on the bottom of the sleeves.

Smocking is also widely used in interior textiles. In textiles for window decoration, smocking is placed mainly in the upper part of curtains, along the pelmet, swag, etc. (Fig. 6, a). There are separate models made with smocking on the entire surface of the curtains. Pillows with smocking can be of various shapes: round, rectangular, cylindrical, etc. On pillow covers and bedspreads, there is the greatest variety of types of smocking, both in terms of marking schemes and in the direction of location. Smocking on pillows is usually placed evenly or ornamentally, as well as radially, over the entire surface. On bedspreads, smocking is placed over the entire surface or in strips – straight or curved (Fig. 6, b). On tablecloths, smocking decoration is usually performed on the part of the product that hangs freely (Fig. 6, c). Often manufacturers offer bedroom sets that consist of curtains, bedspreads and pillows decorated with smocking (Fig. 6, d).

So, as a result of the analysis, it was found that smocking is widely used in the manufacture of products made of textile materials for both clothing and interior purposes, while smocking of Waffle and Basket types are widely distributed in products of various ranges, and smocking of other types has a limited scope of application.

### **2.3 Classification of smocking varieties**

There is no single classification of smocking, and therefore there is a need to develop such a classification.

#### **Machine made smocking**

It is generally accepted to divide smocking into handmade and machine made. Machine made smocking is formed using machine stitches in several rows, laid parallel or according to the drawing, followed by tightening the part. There are the same types of machine made smocking: simple – “columns”, with an elastic thread, with an elastic band, with a cord, and so on.

Simple columns smocking is formed by laying parallel lines on the front side at a distance of 0.6...2.0 cm from each other, followed by pulling the fabric cloth to the lower thread. To give the finish elasticity in the manufacture, an elastic thread, ribbon or elastic cord is used.

Another type of smocking with the use of modern materials is smocking with a crash effect. To form smocking with a crash effect, a curly stitch on a sewing and embroidery machine is used. Special Smocking threads are used as a shuttle thread, which shrinks up to 30% under the influence of elevated temperature. After embroidery, the semi-finished product is ironed on the back side, as a result of the lowering of the thread, the fabric is tightened, forming a crash effect.

Derived from simple columns smocking is the smocking with decorative stitching. They are made in several operations. First, parallel stitches are laid and the fabric is pulled together to the specified dimensions, then decorative stitches are laid along the tightened sections.

We consider it necessary to supplement this classification with a modern variety of smocking with a cord – with a special tape (curtain). Curtain tape is made of different widths with different numbers of rows of cord, where the upper edge of the curtain is tightened after sewing, to obtain figured assemblies on the upper edge of the curtain.

#### **Handmade smocking**

Handmade smocking is marked up depending on the selected type on the front or back side. In this case, a pattern with holes for marking points is used, as well as lines or arrows connecting the points that need to be combined when creating smocking.

In our research, the concept of rapport is important. The rapport of smocking is a repeating

part of assemblies of smocking on the material which is decorated (Fig. 7). The rapport for each type of shaped smocking has a certain number of columns in width, a certain number of rows in height, and a certain location of arrows in cells. For example, the rapport of smocking “basket” includes two columns and two rows marked with

an arrow marking (filled columns and rows). An important geometric parameter of smocking is the size of the cells that form the rapport, i.e. the width and height of each cell. For most types of smocking, cells are square, although for other types of smocking, one can use cells in the form of a rectangle, trapezoid, triangle, or hexagon.

Table 1: Systematization of handmade shaped smocking

Variety	Main type		Derived type	
	layout diagram	sample	layout diagram	sample
Waffle				
Flower				
Basket				
Wave				
Rose				

In article [25] handmade smocking are divided into shaped smocking with embroidery on top of the assemblies and shaped smocking with clips.

The texture of smocking is characterized by its structure and type of decorated textile material by appearance, weave and physical and mechanical properties (thickness, stiffness, drapery). The structure of smocking is determined by the parameters of the process of its formation, which include: marking scheme; side of fastening of smocking assemblies (front or back); method of laying smocking assemblies.

The following main types of shaped smocking with clips are Waffle, Flower, Basket, Waves, Rose. By modifying the smocking rapport by adding columns without assemblies, you can get derived drawings. For example, based on the Basket texture, when adding a free column, you get Herring bone smocking, and when adding another free column, you get Bone smocking. Modern shaped smocking is made with different rapports depending on the type of smocking. The number of columns of the smocking rapport varies from two to six, the number of rows – from two to four. “Waffle” and “basket” smocking have the smallest rapport – two columns and two rows with markup, these types of smocking do not have free columns and rows of rapport. One of the most common types of smocking “flower” has a rapport of four columns and four rows, including two free columns, and two free rows.

As justified by [24], the transformation of the rapport of known smockings can be done in three ways: the introduction of free columns; removal of free columns; removing the free row.

We consider it necessary to add other ways to obtain derived types of smocking: adding symmetrical columns, as well as introducing additional clips, shifting the pattern of one column relative to the neighboring one, and using fillers for additional volume of convex fragments of the fabric.

All the smocking types discussed above are made on the basis of a square or rectangular markup grid. Origami smocking obtained on the basis of a hexagonal grid of markings is also known. The main and derived shaped smockings are systematized in Table. 1.

#### **2.4. Geometric parameters of smocking for textile products**

By the geometric parameters of smocking, we understand in this paper the features of the location of smocking on the product, as well as the

linear dimensions of cells in the rapport for the formation of smocking.

According to the location of smocking on the product, there are: linear, multi-row, concentric, ornamental, and chaotic. Varieties of smocking by location on the plane are shown in Fig. 8.

The size of the cells depends on the design of the product, as well as on the properties of the material. For the Waffle smocking, a linear cell size of 0.5 ... 2.0 cm is recommended. For the Basket type, a cell width of about 2 cm is usually used, although on author's models of products made of dense materials, a larger cell size is used – up to 5 cm or more. The largest cell size for Basket smocking, which we found as a result of prototype analysis, was 18 cm.

Based on the results of a review of publications and surveys of specialists, it was revealed that important parameters of the material that should be taken into account when choosing geometric parameters of smocking are: surface density, thickness, rigidity, drapery [23].

So, based on the results of the systematization of information on smocking as a type of embellishment, a classification of smocking varieties is proposed, shown in Fig. 9. This author's classification is based on the facet principle.

#### **Conclusions**

As a result of the analysis of literary sources and museum exhibits, it was found that smocking, as a figurative collection of fabric in several rows of collections, has been known in Europe since the 16th century, and was also used in folk costumes of Ukraine (Pukhlyky) and England (Smock-frock). Since the 70s of the twentieth century, smocking has gained popularity as an element of clothing embellishment, mainly for women and children, as well as for interior textiles.

The author's classification of smocking has been developed according to their design and technological features: the method of execution, the shape and arrangement of cells, the type of stitch, materials for the formation and decoration.

It has been confirmed that modern clothing and interior designers widely use smocking of various types as decoration for garments for both clothing and interior purposes. At the same time, Waffle and Basket smocking are widely used in products of various assortments.

Optimal geometric parameters of decoration, selected by taking into account the properties of materials, enable getting a high-quality texture of the surface of a textile with smockings.

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Fig. 1: Neck trims with smocking: a – Portrait of Laura Pisani (1525) by Gabriele Cappellini; b - Pukhlyky on a Ukrainian shirt (Ivan Honchar Museum).



Fig. 2: Smocking embellishments: a – smocking on the bodice, wedding dress “princesse”, 1876 – 1878, Collection Galleria del Costume di Palazzo Pitti; b – smocking on the sleeves, dress, 1881-1882, The John Bright Collection [5].





Fig. 3. Ethnic costume decoration with smocking: a – men's shirt with smocking “smock-frock”; b – sleeve of a “smock-frock” shirt, England, 18th century; c – sleeve of a women's shirt, Lviv region, Ukraine.



Fig. 4: Women's clothing with smocking from the 1980s.



Fig. 5: Models of women's and children's clothing with smocking: a, b – Christian Lagerwaard [9]; c – Jean Louis Sabaji FW 2017 [22]; d – Charlotte Sy Dimby [4].

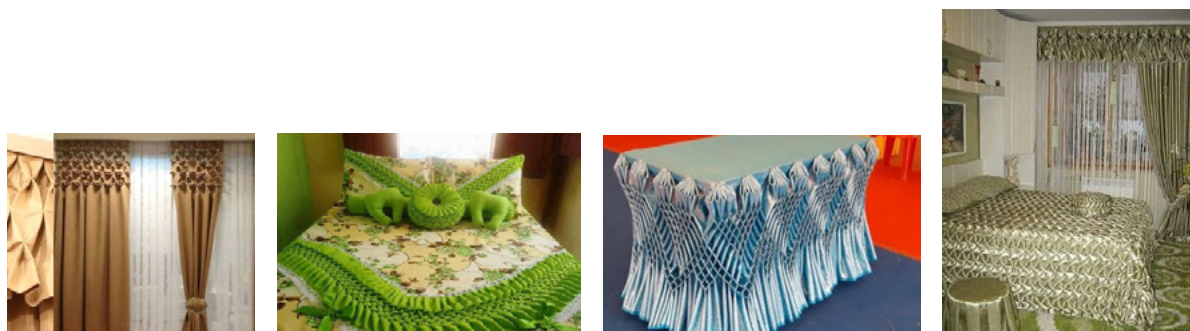


Fig. 6: Interior textiles with smocking: a – curtains; b – bedspread and pillows; c – tablecloth; d – bedroom set.

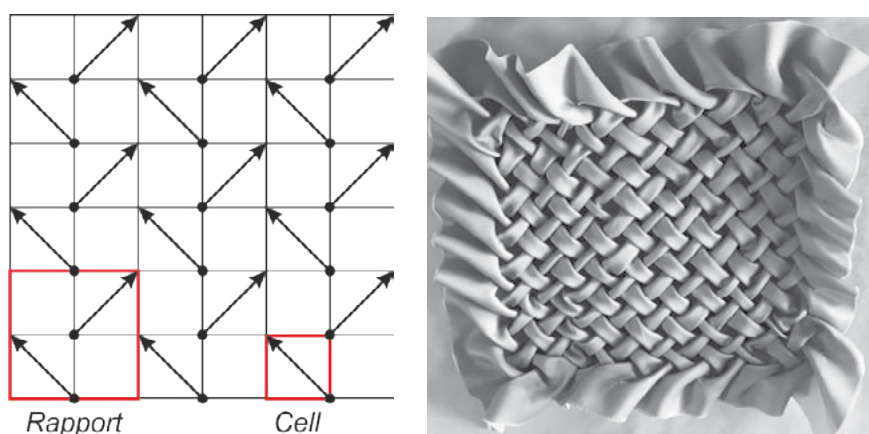


Fig. 7: "Basket" smocking: a – layout diagram; b – ready sample.

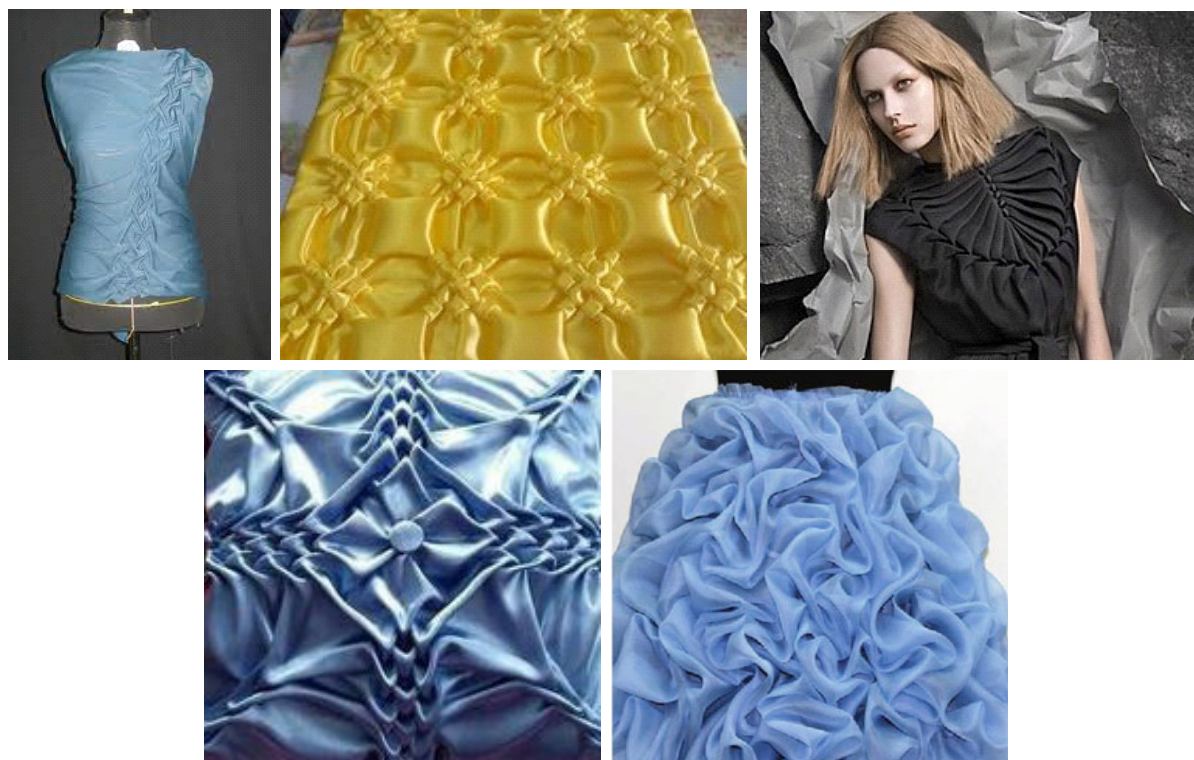


Fig. 8: Types of smocking by location on the product: a – linear, b – multi-row, c – concentric, d – ornamental, e – chaotic.



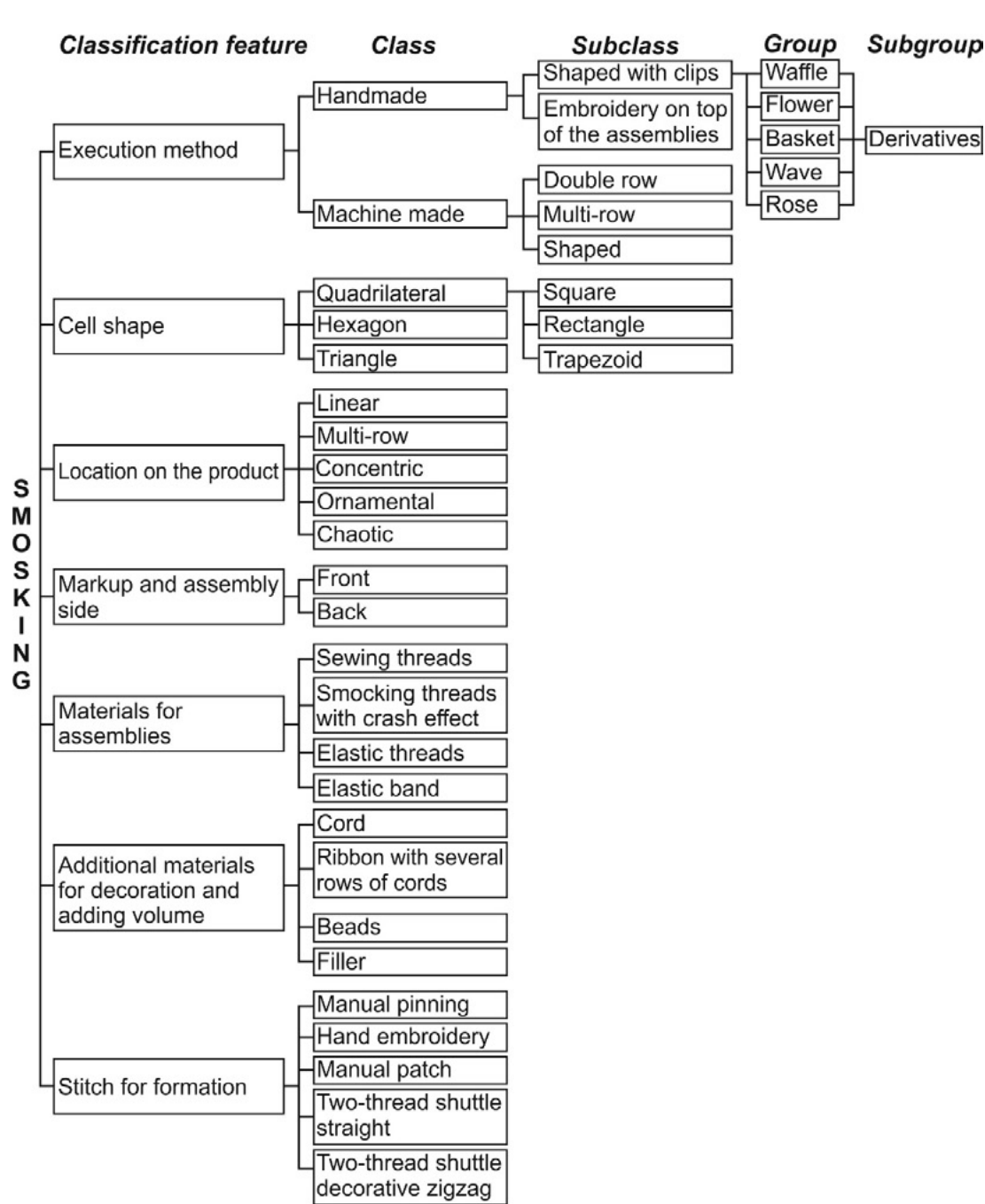


Fig. 9: Classification of smocking for decoration of textiles.