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# The Peculiarities of the Ornamentation of Lithuanian Traditional Woven Textiles

## Abstract

*In this work, attention is focused on the salience and repetition of symmetry and colour features over shifts of time and on the preference of symmetries and colours in Lithuanian traditional textiles within all ethnic regions. The analysis of ornamental symmetry is based on the geometrical characteristics governing the structures of these designs. For this reason, Woods' classification and notation system as improved for woven ornaments is applied. The ornaments of Lithuanian pick-up sashes and overshot fabrics have been analysed using the original computer-aided data bank, which stores record-sets of 600 exhibits collected from the resources of the M.K. Čiurlionis National Museum of Art. Using computer-aided simulations of the ornaments helps to both preserve and analyse these sensitive and archaic textiles. The results obtained from the analysis of Lithuanian ornaments on pick-up sashes and overshot fabrics contribute to the understanding of the originality of character of these traditional textiles, and the versatile relationship between the culture's mentality and technologies.*

**Key words:** woven ornament, symmetry group, colour, databank.

## Introduction

Ornament is a decorative element of fine arts, craft and architecture, formed from a single or few repeated geometrical or pictorial motifs. As D.K. Washburn [1] points out, there are the so-called basic-level features, whose specific combination and manipulation results in a particular ornament showing a culture-specific (ethnic) style. These universal properties or features of ornament are symmetry, line with contour, colour, and texture. The investigation of ornamentation reveals the material and spiritual aspects of a people's creativity. It helps to understand how cultural information is embedded in a structure of pattern of folk art, describes the fundamental principles of living and understanding the nation itself in the world. On the other hand, H.J. Woods [2] noted that "the 'science' of design, is in fact, only a simplified and specialized part of the branch of physics devoted to study of crystalline forms, 'crystallography', just as the latter, to the mathematicians, is nothing but an application of the great branch of mathematics, the 'Theory of Groups'." Information technologies enable scientists to effectively apply the science of design to researching the culture and ethnic style of various nationalities [4 - 6].

The traditional textiles have contributed to one of the most important parts of Lithuanian folk art in the 19th and 20th centuries, and play a significant role in contemporary life. The analysis of Lithuanian ornaments and patterns is meaningful, because it reveals the originality of their character, traditions, customs and differences between the various ethnic regions of Lithuania. Moreover, it allows researchers to find out more about

Lithuanian national textile features and the roots of weaving traditions, and helps to understand the versatile relation between the culture and new technologies.

## Materials and methods of investigation

This analysis of Lithuanian ornamentation peculiarities is based on the Database of Ornamentation software for the Lithuanian national fabrics, the storage data bank of the exhibits from the M.K. Čiurlionis National Museum of Art [6]. The number of pick-up sashes and overshot fabrics studied in this article is 279 and 290 showpieces respectively, which were woven at different historical periods, originate from different ethnic regions of Lithuania, and display various materials of composition, symmetry groups, colours and measurements.

## The object of investigation

The first type of fabrics analysed is pick-up sashes. Only pick-up sashes from the Dzūkija ethnic region are stored in the data bank of the Lithuanian National Fabrics. According to Dr. V. Tumėnas' investigation, pick-up sashes were predominant in this south-eastern ethnic region of Lithuania [7]. The other kind of fabrics investigated is overshot fabrics. These fabrics were popular throughout Lithuania. So, the variation of overshot fabrics within the ethnic regions of Lithuania differentiates

them from the homogeneous origin of the pick-up sashes. The biggest part of overshot fabrics comes from the Higher Lithuania region (40,32%); furthermore, nearly the same amount of exhibits come from the Samogitian (25.0%) and Dzūkian (22.58%) regions. Another part of the overshot fabrics is from Suvalkija (11.29%), and the smallest amount (only two presented exhibits) are from Poland and Byelorussia.

According to the periods of weaving, all exhibits were classified into four groups: the 19th century, the periods 1900-1918 and 1918-1940, and the years after the 1940s. A fifth group was excluded from exhibits, as there is no significant data about their time of weaving in the Museum's records (Table 1). When compared to the pick-up sashes over time, most of the overshot fabrics are dated to the periods of 1918-1940 and after 1940. This shows that the pick-up sashes stored in the M.K. Čiurlionis National Museum of Art are more archaic than the overshot fabrics.

The usage of raw materials is worth considering, because it is one of the main distinguishing features of Lithuanian traditional textiles. The most popular composition materials of all the exhibits are flax, cotton and wool. Other materials are also used to weave these fabrics, namely silk, hemp and tow, but they are not as popular as the ones mentioned

**Table 1.** The spread of exhibits in time periods of weaving (in %).

Type of fabric	Period				
	19th century	1900-1918	1918-1940	After 1940	Unknown
Pick-up sashes	27.24	15.77	6.09	2.51	48.39
Overshot fabrics	4.83	5.86	22.76	21.72	44.83

previously. In general, the fabrics were more often woven using different type of threads than made out of a single yarn material. For pick-up sashes, wool threads were mainly used for creating ornaments, and linen or cotton threads were used for background (Table 2). Woollen ornament threads were preferred because of their thickness and bulky appearance, and so an embossed and expressive surface for the sashes was obtained.

The main raw materials of overshot fabrics are cotton, flax and wool and different combinations thereof (Table 2). It must be noted that wool threads are not the main component of the overshot fabrics, as their purpose and contribution to the ornaments' peculiarity is not as important here as in the pick-up sashes. The composition of overshot fabrics is much more dependent on the purpose of the fabric itself. Most of the overshot fabrics presented in this study are ascribed as towels, tablecloths and pillowcases; therefore flax and cotton are the maximum numbers within all raw materials (42.16%). Wool, in combination with flax and cotton, was the main material for weaving the blankets or bedspreads. The wool and cotton material combination comprises 19.51% of all the overshot fabrics, and wool, flax and cotton 12.54%.

### The method of investigation

Thus, the main characteristic features of Lithuanian fabrics – region of origin, time of weaving, raw materials, symmetry classes and groups – were obtained and systemised in this investigation. The colours of pick-up sashes and overshot fabrics were selected visually by observing every picture of a single exhibit. It must be noted that for pick-up sashes, only the central part was studied in this investigation with regard to symmetry peculiarities. The real ornament is formed in this central part, so it is considered more important in this study, although the classification and notation can also be applied for the side edges separately. Moreover, only colours of the central part are analysed.

The study of the symmetry characteristics of ornamentation is made on the basis of geometrical principles the governing formation of symmetry; therefore improved classification and notation system is applied [3, 6]. The method chosen is based on a systematic approach – the decomposition of ornamentation into structural components, and the determination of the symmetry operation carried out to form the ornament.

**Table 2.** The spread of used raw materials combination in the fabrics investigated (in %).

Type of fabric	Raw material														
	flax, wool	cotton, wool	cotton, flax	cotton, flax, wool	flax	wool	tow	cotton, silk	cotton	cotton, flax, silk	cotton, silk, wool	hemp and other	flax, silk	flax, tow	flax, wool, silk
Overshot fabrics	42.16	19.51	12.54	10.45	3.84	3.00	2	2	1.00	0.7	0.7	0.7	0.7	0.7	-
Pick-up sashes	56.03	35.46	1.42	2.13	0.71	3.19	-	-	0.71	-	-	-	-	-	0.35

## Results of investigation

### Symmetry peculiarities

The ornaments are divided into mono-translational and di-translational. Only a small part of all pick-up sashes belongs to the di-translational class (18.85%), where the ornament is regularly repeated by translation in both longitudinal and transversal directions. The majority (83.15%) of the pick-up sashes are labelled as having mono-translational ornaments. On the other hand, mono-translational ornaments are rare in overshot fabrics. Here, the situation of symmetry classes is totally opposite, as the di-translational symmetry class contributes to nearly 90% of the all overshot fabrics. Despite this, overshot fabrics and pick-up sashes have similar and sometimes the identical types of motifs forming the ornaments: stars, crosses, diamonds and others.

Distribution of symmetry classes is closely connected with symmetry groups. The most common motifs of pick-up sashes (stars, crosses and various diamonds) are formed using combination of 2 segments rotation and horizontal reflection in one direction, so the mono-translational symmetry group pmm2 is particularly distinctive (Figure 1). It represents 164 exhibits out of all 279 pick-up sashes. In general, symmetry groups of Lithuanian pick-up sashes are characterised by twelve symmetry groups in total of both – mono-translational and di-translational ornaments. All other symmetry groups contribute to a small number of pick-up sashes compared to the pmm2 symmetry group. The same layout of symmetry groups on pick-up sashes can be seen in relation to the time periods of weaving, because the pmm2 symmetry group constitutes more than 50% of the total number of pick-up sashes.

The most distinctive symmetry groups of overshot fabrics are p2mm and p4mm (130 and 115 exhibits respectively) (Figure 2). The first symmetry group is actual-

ly formed using the previously described operations of ornament creation for the same motifs. However, the difference compared to the symmetry group pmm2 is that the same motifs are translated in both directions for the p2mm group. Therefore, the pmm2 symmetry group is not characteristic of the overshot fabrics at all (only 14 exhibits), whereas it is predominant in the pick-up sashes. The same situation in the symmetry groups of overshot fabrics is observed in relation to the time of weaving. Here, the p2mm and p4mm symmetry groups' distribution follows the same order: p2mm is the most distinctive in all the periods of weaving except one; the period after 1940. Overshot fabrics of the p4mm group outnumber the amount of the p2mm symmetry group.

Following the results obtained, it can be assumed that even if more pick-up sashes or overshot fabrics were presented in the analysis, or more reliable data of their time of weaving was available, the predominance of certain symmetry groups would still be more than evident. The most common symmetry group of pick-up sashes pmm2 achieves repetition within shifts of time starting from the 19th and up to 20th century. This period covers more than one hundred years. The same situation of repetition and salience of two symmetry groups, p2mm and p4mm, is observed in Lithuanian overshot fabrics as well. So, the preferences of the creators are transmitted down throughout the generations, establishing the weaving traditions and specific perception of beauty of ornamentation. The preferences for these symmetry groups – namely pmm2, p2mm and p4mm – are very familiar in the ornamentation of other cultures as well. Washburn noted that the above-mentioned symmetries, which produce stable shapes with predominant mirror reflections, show special salience in many cultures [8]. These symmetries create ornaments that are easily distinguished, understood and recognised by any individual in their consciousness.

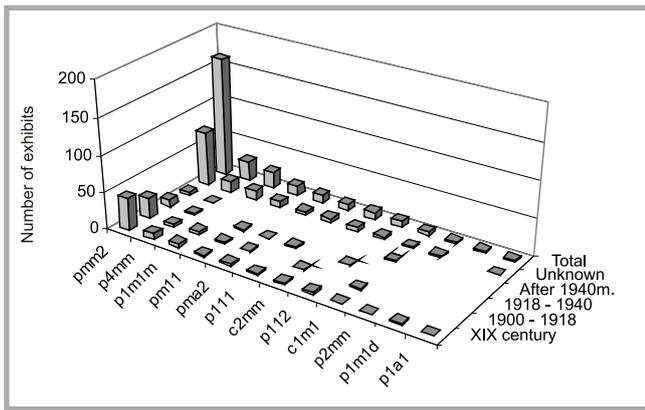


Figure 1. The spread of symmetry groups of pick-up sashes by the times of weaving.

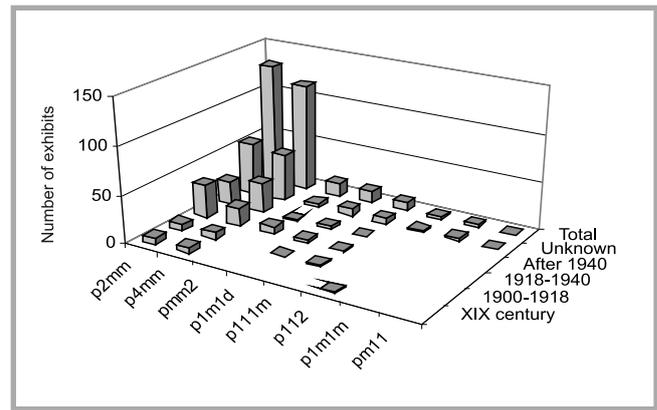


Figure 2. The spread of symmetry groups of overshot fabrics by the times of weaving.

Such figures are seen as ‘good’, because they are regular, simple and stable, and therefore reduce uncertainty in peoples’ minds [1,8]. Considering the Lithuanian ornamentation, the ‘good’ forms are related to such motifs as stars, diamonds, roses, various crosses, etc. The relevance of the symbolic meaning of these signs is worth mentioning in order to understand the specific preference and perception of symmetry by Lithuanian people. For example, diamonds of various shapes are associated with the four compass points, so symbolising the stability of universe. The cross is a symbol of sun or fire; the star is associated with rebirth and hope, roses refer to love and luck; all together they embody all the necessary and desirable aspects of life, which are perceived as the foundations of a harmonious and prosperous entity of living in the world. In general, it can be maintained that this is the manner in which a culture brings out national unity and induces self-consciousness.

### Colour characteristics

The originality of Lithuanian fabrics is associated not only with the specific and unique symmetry features of their ornamentation, but also with their colouring. People interpreted the meanings of colours according to certain traditions and customs. Some colours were suitable for marriages, others for baptisms, and yet others for funerals. The best known among Lithuanian textile colour symbols are the so-called Lithuanian colours – red, green and yellow, the colours of the flag of the Republic of Lithuania. This investigation innovated in being carried out to systemise the colours being used to decorate the overshot fabrics and pick-up sashes, in order to give reliable data of what kind of colours Lithuanian weavers preferred to use. Additionally, the correlation of colouring and symmetry groups

is given. Furthermore, an attempt is made to specify the distribution of colours over time, starting from the 19th century.

The pick-up sashes are distinguished among other Lithuanian traditional textiles by their plentiful colouring. The colouring of different symmetry groups, as well as their overall preferences, is presented in Figure 3. The study of the colours of pick-up sashes showed that the most common are red (56.99%), sand or light yellow (52.69%) and green (33.33%) colours. Many other following colours are present in the pick-up sashes: lavender blue (22.58%), violet (17.20%), dark red (16.85%), blue (14.70%), yellow (12.19%), and others (26.52%). Wool threads are preferred for ornamental warps because of their appearance. This choice is also greatly dependent on the fact that dyed wool threads yield brighter and more vivid colours. The use of flax and cotton for backgrounds is natural, because here less strong colours are

used. Besides, flax does not yield strong colours when dyed. The presumption can be made that the sand colour used for backgrounds for the most of the sashes is particularly related to this type of raw material.

Regarding overshot fabrics, it must be noted that they are generally considered not to be as colourful as pick-up sashes, because many of them have so-called natural grey flax and raw cotton colours, or they are plain white, i.e. made from bleached materials. It was noted that the greatest number of overshot fabrics have so-called natural colours of bleached or unbleached flax. Usually, these lighter and darker grey ‘linen colours’ are combined together, or in addition, white colour is used in a single fabric.

Regarding the chromatic colours, it is obvious that even if they are rare in the overshot fabrics, the main ones are still the same as in the pick-up sashes – red, green,

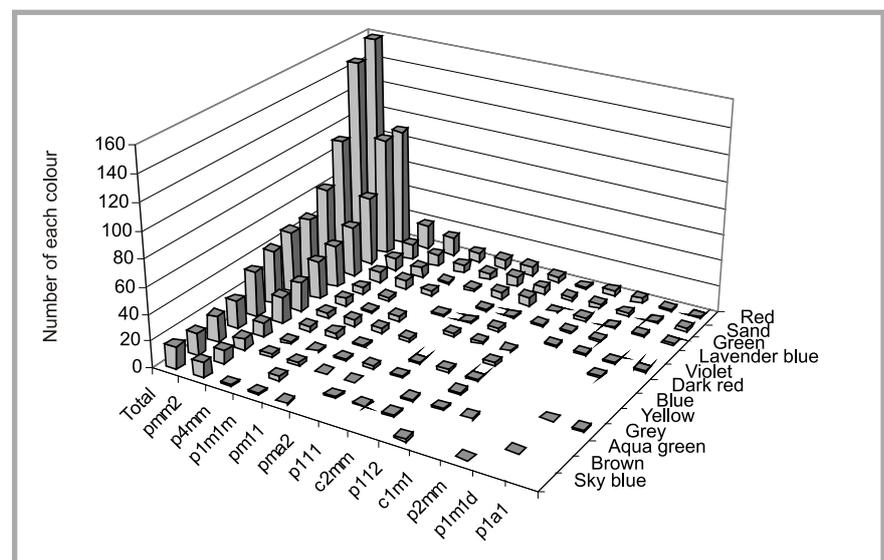
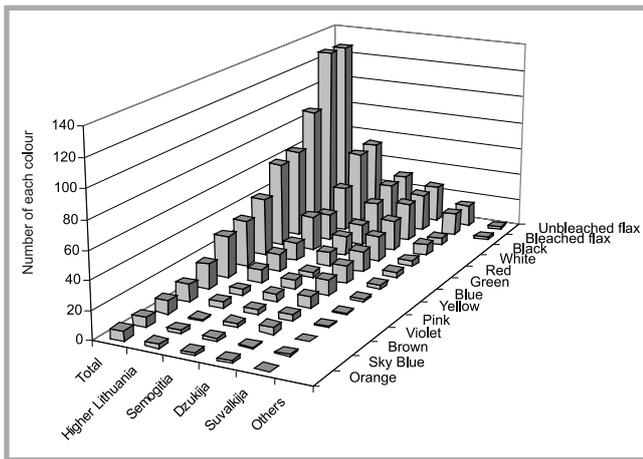
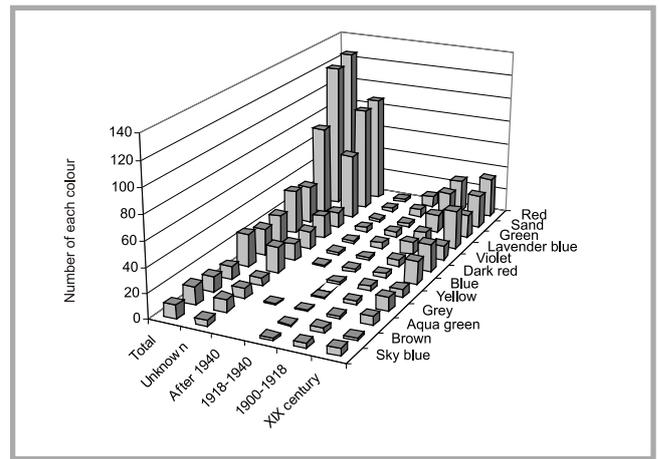


Figure 3. Distribution of colours in symmetry groups of pick-up sashes.



**Figure 4.** The distribution of colours of overshot fabrics in the ethnic regions.



**Figure 5.** Variation of colours of pick-up sashes in times of weaving.

yellow and blue. It must be noted that colour has a slightly different purpose in the overshot fabrics, compared to pick-up sashes, whereas colouring was the main distinguishing feature of cloths. The usage of colours in overshot fabrics is closely related to the purpose of the fabric itself and the need for simple functionality or maintenance, rather than solely to decoration. The interaction of raw materials and colouring of overshot fabrics is also worthy of note. For example, the most colourful overshot fabrics are the bedspreads; dark and other ordinary colours are mainly used to weave bedspreads, so it is not surprising that bedspreads contribute to the part of the fabrics where wool yarns are frequently used. The reason for these choices of colour and raw material is that bedspreads were used in daily life, and so they had to be not only beautiful, but also warm, easy to clean and would not show dirt too much. Many overshot fabrics have natural grey and white colours, which are related to bleached and unbleached flax threads, as well as cotton threads; coloured fabrics are therefore mainly towels and bed linen. This type of fabric is not colourful, but their white and natural fabrics reveal simple but unique ornamentation. Besides, it would be inexpedient to state that the colours of overshot fabrics have only functional appliance and meaning. All fabric colours are linked with specific symbolic meanings. An analysis of overshot fabrics gathered from various ethnic regions of Lithuania show that the same layout of colour distribution is obtained (Figure 4).

Here the most common colours are the same within all regions, except with small changes between red and white in the Higher Lithuania region. It is noted by various sources that red is especially predominant in this region of Lithuania con-

sidering the salience of red colour in the traditional fabrics and in the outfit of national costume from Higher Lithuania [7].

Figure 5 shows the colour distribution of pick-up sashes in time periods from the 19th century onwards. The colour combination – red, sand and green – clearly remains practically unchanged during the period when pick-up sashes are woven. The spread of colours of overshot fabrics in weaving times is almost the same in every period. The chromatic colours line up as follows: red, green, yellow, blue and others.

Therefore, despite many conflicting sides commenting on whether the choice of yellow colour for the Lithuanian nation flag was based on the reasonable salience of this colour in the folk art of Lithuania, these results obtained still show the clear evidence of salience and repetition of this particular tricolour composition of red, sand or yellow and green. All together, these colours are one of the best-known colour symbols in Lithuanian culture, showing specific colour perception in Lithuanian culture.

## Conclusions

Mono-translational ornamentation is more common for Lithuanian pick-up sashes (83.15%), whereas more overshot fabrics have a di-translational arrangement of motifs (89.31%). More than half of the pick-up sashes show the salience of the pmm2 symmetry group, while overshot fabrics show a predominance of p2mm and p4mm.

The most common colours of Dzūkian pick-up sashes are red (56.99%), sand (52.69%) and green (33.33%), which are called typical Lithuanian colours. The biggest part of overshot fabrics have

so-called natural bleached or unbleached grey flax (53.10%) and white (25.52%) colour combinations, as well as the Lithuanian flag colours – red (24.48%), green (18.28%) and yellow (12.41%). The blue colour occupies the same amount of exhibits as the yellow colour, as it often used as a background colour, similarly to black.

The interrelation of colours and different symmetry groups show the non-random preference for the same colours in all exhibits for both pick-up sashes and overshot fabrics.

The repetition of the colours of pick-up sashes and overshot fabrics in relation with time showed that the same main colours are predominant in all the weaving periods investigated.

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Received 29.06.2005 Reviewed 08.01.2006