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The Diamond Twills in Lithuanian Folk-skirts

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The weave of woven fabric is one of the most important parameters of fabric structure, which determines fabric properties. The Lithuanian folk woven fabrics have not been investigated before from the technological point of view, but it is very important to do so today, when the current trend is to come back to natural, authentic fabrics. That's why in this article the weaves of Lithuanian folk skirt fabrics are analyzed with particular attention to the diamond twill weaved fabrics. After investigating 257 Lithuanian skirts from National M. K. Čiurlionis Art Museum's Folk Art department's textile collection, it was established that plain weave fabrics are the most widespread (55 %). In the second place (24 %) are fabrics of different twill weaves. Diamond twills of various complexities make up the large part of them. At the time of investigation the fabric weaves, their plans of weave with draft, succession of weft change and base weave were analyzed.

Keywords: folk skirt, fabric weave, diamond twill, plan of weave.

INTRODUCTION

The properties of woven fabric depend on different parameters of fabric structure. One of them is the weave of fabric. It is very important today, when we are coming back to natural, authentic fabrics, similar to Lithuanian folk fabrics. That's why it is very important to investigate these fabrics and to give recommendations for their manufacturing. This investigation is also important from the interdisciplinary point of view. The identification and analysis of weaving techniques of authentic folk fabrics will give possibilities for comparison and disclosure of historical-cultural evolution of weaved patterns in the context of neighboring countries and world cultures.

In the last ten years ethnologists as well as technologists analyzed the Lithuanian folk fabrics. Ethnologist Tumėnas [1] analyzed the Lithuanian pick-up sashes. He divided the ornaments of sashes into small elements, which were used as the basis to form the more complex ornaments. He also presented classification of these more complex ornaments based on the complexity level of primary element's transformation. Savoniakaitė [2] analyzed ornaments of traditional spreads. She classified them into circles, stripes, squares, stripes-squares, and rectangular patterns. Nėnienė [3] widely investigated the distribution of shawl weaves of the XIX – XX centuries according to the complexity, their interrelation with color ornament and fiber, compared patterns and weaves of shawl fabrics weaved by peasant, craftsman, and factory. Technologists Kazlauskienė, Neverauskienė, Milašius [4] investigated the Lithuanian pick-up and overshot fabrics, their ornamentation by using symmetry principles of ornaments, proposed by Woods [5] and developed by Hann [6]. Authors [4] suggested their own system of classification, based on different groups of symmetry and operations with matrix, and applied these principles to woven ornaments, which have some very specific features. Milašius, Katunskis, Neverauskienė, Kazlauskienė [7] suggested software to analyze these ornaments by using principles of symmetry for woven ornaments.

Researchers from Latvia Beikule, Kukle and Vilumsone [8] investigated the use of Latvian folk fabrics in the contemporary design. Ornaments, patterns, and especially colors of folk fabrics may be used in contemporary fabrics. The ethnologists Alsupe and Karlsone investigated prevalence of weaving techniques and patterns in Latvian folk textile. Alsupe [9] disclosed the interrelations and innovations of folk and craftsman's weaving techniques. Karlsone [10] paid more attention to the structure of weaves, their chronological diffusion, and variety of their titles.

Lithuanian ethnologists have discussed color combinations, patterns, and chronological change of silhouette of skirts. Looking at the silhouette, the skirts have two different cuts. Traditional earlier skirts are sewed from 3 – 7 rectangular pieces, drawn together or finely pleated. Check patterns of plain fabric are the most common in skirts of this kind. In the second half of XIX century, sewing technique of skirts changed, parts were cut from widening pieces of fabric. In this period the skirts of modern cut were more often weaved in one or two colors, fancy patterns.

So, Lithuanian skirts have not been analyzed from the technological aspect, contrary to shawls or overshot and pick-up fabrics. Because of that it is very important to investigate them from the point of view of weave and pattern. In this article more attention is paid to the fabrics of folk skirts weaved in diamond twills. All fabrics weaved in diamond twills belong to fancy fabrics according to the pattern.

INVESTIGATION RESULTS

257 Lithuanian folk skirts from the National M. K. Čiurlionis Art Museum's (ČDM) Folk Art department's textile collection were analyzed. The skirts are weaved during the XIX century and the first half of the XX century and collected from different places in Lithuania. They include all ethnographical regions of Lithuania.

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The weaves of skirts were established with help of counting glass. The plans of weave were obtained with software "Desint'98" (author of program is V. Milašius). Plans of weave include warp draft, succession of weft change and base weave. At first, distribution of all investigated fabrics according to the weave (Fig. 1) was established. As one can see, plain weave fabrics make up the biggest part (55 %). Different twills make up 24 % of all weaves. The fabrics weaved in plain weave, combined with compound weaves, are in third place. They make up 8.5 % of all fabrics. Compound (4.5 %) and other combined weaves (4 %) are the least widespread. Fabrics, weaved in satin weaves, make up 2 %. The rib weaves make up about 1.5 %, jacquard weaves make up about 0.5 %.

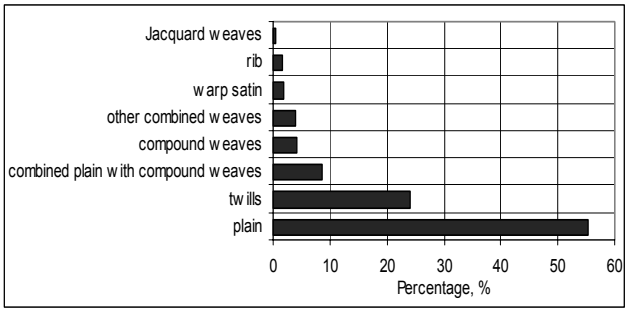


Fig. 1. Percentile distribution of fabrics according to weaves

Twill weaves are especially varied, their distribution is shown in Fig. 2. Reinforced twill weave 2/2 fabrics are the most encountered (41.6 %). Various twill herringbone weaves make up 16 %. Diamond twills of various complexities (ornamental diamond twills and simpler diamond twills) are in the third place (15 %). Elementary twills 3/1 and 2/1 make up 11 %. Compound diamond twills, similar to small repeat crape weave, were in the fifth place (5 %). Combined positive and negative twills (1.6 %) and twills combined with 4 heald shaft satin (5 %) together make up 6.6 %. Compound twills, plain combined with different direction twills and broken twills make up 1.6 % each.

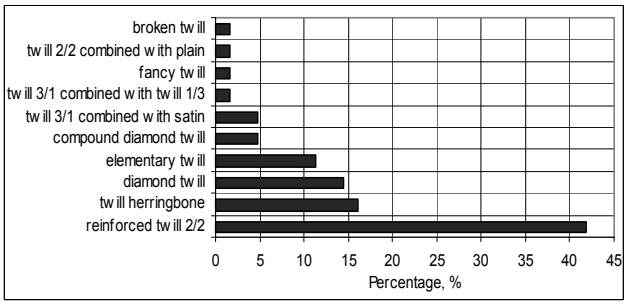


Fig. 2. Percentile distribution of fabrics of twill weaves

All diamond twills can be distributed into two groups. Diamond twills of the first group have small repeat, but they are made by transforming base weave in original way, and it results in interesting weaves. The diamond twills of another group are ornamental diamond twills, the warp and weft repeat is larger, and transformation of warp and weft is more sophisticated.

The plan of weave of one of simplest diamond twills is shown in Fig. 3. The weave of this fabric is shown on the bottom left side, the draft is on the top left side, base weave is on the top right side, succession of weft change or, on the other hand, order of treadles tread is on the bottom right side. Such plans of weave can be applied to weaving with hand loom with treadles, i.e. with tread of corresponding treadle, the corresponding warp thread of base weave is weaved. In this case the card of the main weave will correspond to the base weave and will be much shorter than in the case of full plan of weave.

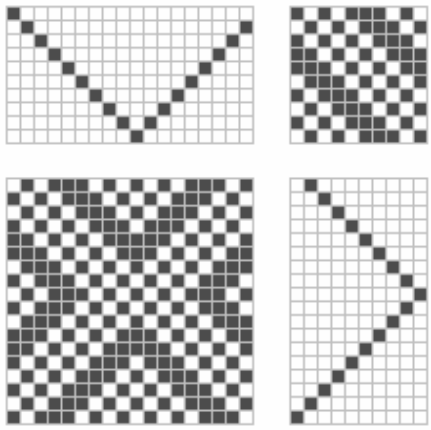


Fig. 3. The plan of weave of skirt fabric (village Plynių, area Lukšių, district Šakių, 1900, warp – violet wool, weft – green wool, ČDM E3708)

We can see that weaving of fabric needs 10 heald shafts, where the warp threads are drawn-in in reversed drafting. Fabric also needs 10 treadles. It is the diamond twill, made by breaking base twill in positive way in warp and weft directions.

Not sophisticated diamond twill is shown in Fig. 4. It is made in a similar way to the weave in Fig. 3, but it is not broken completely in the warp direction. For this reason, it will need less heald shafts than treadles (16 heald shafts and 18 treadles).

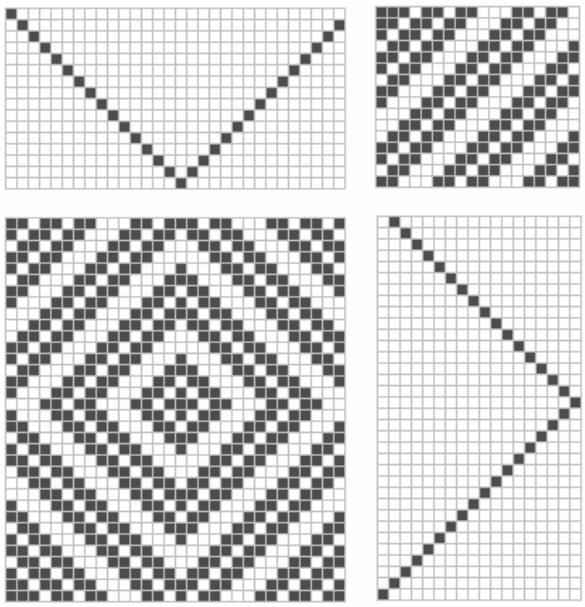
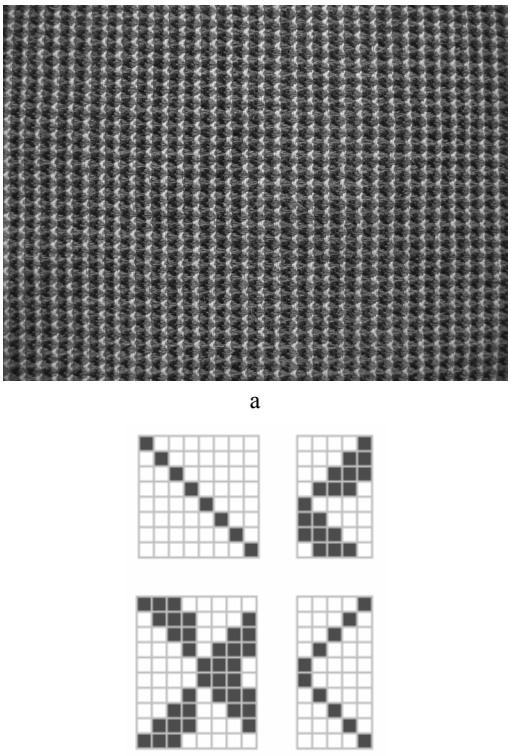


Fig. 4. The plan of skirt fabric weave (village Pakrovų, area Stakliškių, district Prienų, warp and weft are woolen, fabric is painted, ČDM E5149)

Also one of uncomplicated but quite interesting diamond twills is shown in Fig. 5. This twill is broken in warp direction in negative way and in weft direction in positive way. Because of this reason, threads do not reiterate in warp direction and the warp threads are drawn-in in straight draft. Threads reiterate in weft direction and fewer treadles (5) are needed to weave this fabric.

The plan of weave of incompletely broken diamond twill is shown in Fig. 6. 4 heald shafts, but 7 treadles are needed to weave this fabric.



a

b

Fig. 5. The view of skirt fabric (a) and the plan of skirt weave (b) (village Duburių, area Alksnėnų, district Plungės, warp – white and dark grow cotton, weft – grow wool, ČDM E3549)

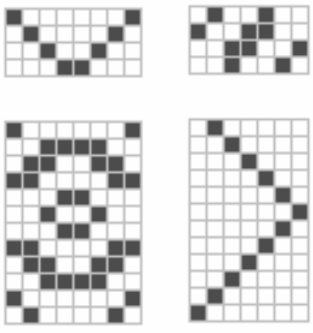
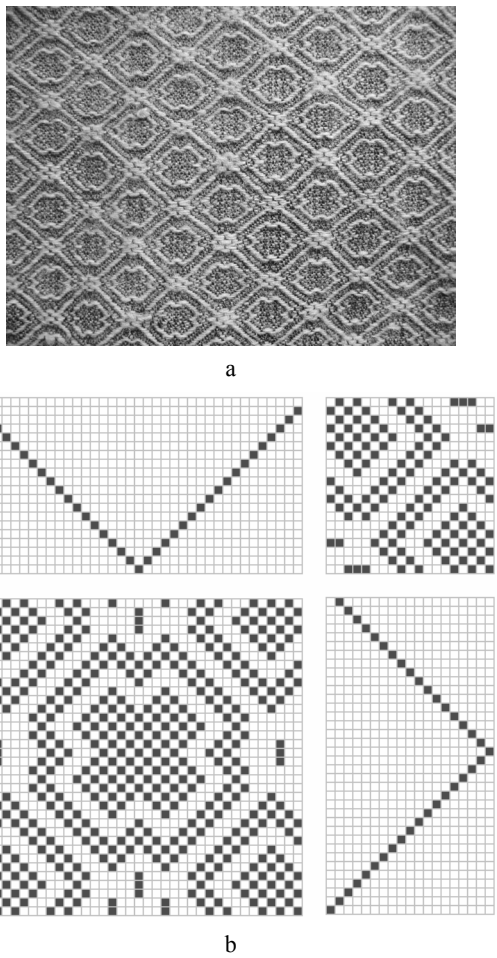


Fig. 6. The plan of weave of fabric skirt (Žiežmariai, district Kaišiadorių, XIX century II half, warp – motley cotton, weft – motley wool, fabric is check, ČDM E4023)

While investigating skirts weaved in diamond twills, many fabrics in ornamental diamond twills were found. One of the most sophisticated weaves is shown in Fig. 7. It is interesting ornamental diamond twill with elements of mock-leno weave. In this plan of weave 20 heald shafts controlled by 19 treadles are necessary. The warp threads are drawn-in in reversed drafting.



a

b

Fig. 7. The view of skirts fabric (a) and the plan of skirts weave (b) (area Stakliškių, district Prienų, the end of XIX century, ČDM E6568 and village Kisieliškių, district Alytaus, ČDM E6409, warp – black cotton, weft – white wool)

Another plan of weave of ornamental diamond twill fabric is shown in Fig. 8. The draft is sophisticated enough; the warp threads are drawn-in into 21 heald shafts in fancy draft. But the control of heald shafts is easier; it is necessary to have only 8 treadles.

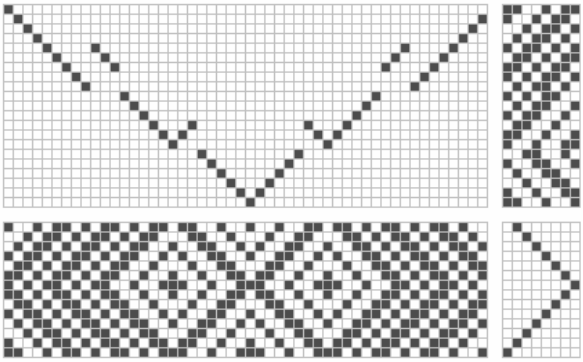


Fig. 8. The plan of weave of skirt fabric (village Gelažiūnų, district Prienų, 1900, warp – grow cotton, weft – green wool, ČDM E2921)

Ornamental diamond twill is shown in Fig. 9. Some elements of basket weave can be observed in this weave. Many heald shafts and treadles (21) are needed for weaving this weave because there is little amount of

repeating threads. The warp threads are drawn-in in reversed drafting.

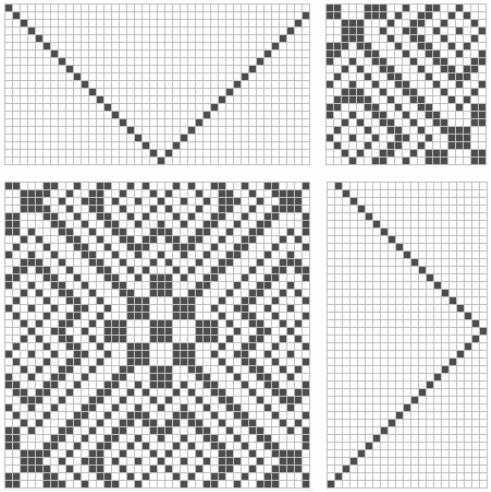


Fig. 9. The plan of weave of skirt fabric (village Salos, area Daugų, 1913, warp – brown wool, weft – blue wool, ČDM E3067)

Weave of fabric of folk skirt ČDM E3934 (Fig. 10) is made from twill weaves by breaking them in different ways. The warp threads are drawn-in into 21 heald shafts in fancy draft. But 25 treadles are needed for heald shafts control, because threads are repeating less in weft direction than in warp direction.

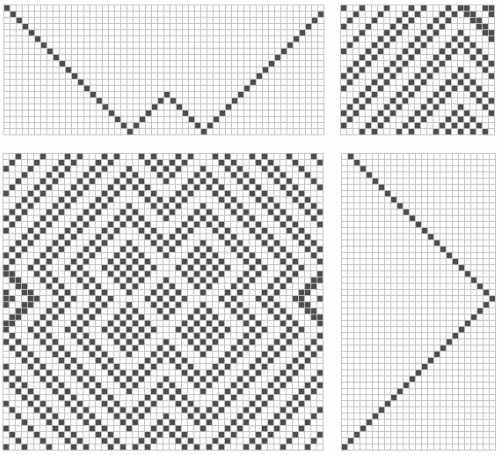


Fig. 10. The the plan of skirt weave (village Krūminių, area Valkininkų, district Varėnos, the third decade of XX century, warp – brown cotton, weft – yellow wool, ČDM E3934)

So it is established that many Lithuanian folk skirts are weaved in diamond twills of different complexity. Between them there are some original weaves of small repeat. Only a small amount of heald shafts and treadles are needed for these weaves. Ornamental diamond twills are sometimes combined with different weaves (basket, mock-leno). A large amount (up to 21) of heald shafts and treadles is needed to weave these combined weaves.

CONCLUSIONS

After analyzing 257 fabrics of Lithuanian folk skirts from the M. K. Čiurlionis Art Museum textile department and establishing and analyzing their weaves, these conclusions can be presented:

1. It was established that the fabrics of plain weave make up the largest part of the weaves (55 %), various twill weaves are in the second place (24 %), plain weaves, combined with compound weaves, are in the third place (8.5 %).
2. Fabrics weaved in twill 2/2 make up the largest part of the twill weave fabrics (42 %). In the second place (16 %) are twill herringbones. In the third place (14 %) are diamond twills.
3. It was determined that the diamond twills can be made in two methods, i.e. from the originally transformed weaves of small repeat and ornamental diamond twills of big repeat.
4. The diamond twills of small repeat are made simply by originally transforming the warps and wefts of base weave. To weave these weaves only a small amount (up to 10) of heald shafts and treadles is needed.
5. To weave ornamental diamond weaves a big amount (up to 21) of heald shafts and treadles is needed. The warps are drawn-in in reversed drafting or fancy draft.
6. Similar fabrics can be weaved with industrial and hand looms by using a certain order of treadles tread. In these cases the cards may be simpler.

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