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# **To A Question of Rational Usage of Wastes from Fur—Half-Finished Products**

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**ABSTRACT** A great attention is given to issues of non-waste use of area of pelts of fur half-finished products of various kinds. Optimal variants for cutting skins, depending on type of fur and appointment, have been developed with aim of maximizing use of area of skins, minimizing inter-leaf and edge waste. The developed elements of an ornament can find application at dressing of separate sites of fur products (a board, a collar, a product bottom), accessories and other kinds of products. The received results have allowed to generate information fund for combinatory формообразования products from a waste.

**KEY WORDS:** fur- half finished product, fur industry, ornament, a variety of scales, various turns.

## **I. INTRODUCTION**

The high cost of fur products connected with beauty and unique properties of fur, demand the nonconventional approach to designing process: it is more than novelty, courageous experiments, complexity of constructive and technological decisions, originality of elements of a decor and accessories.

The great attention is given to questions of use of the area of skins of a fur- half finished product of various kinds without waste. Optimum variants of cut skins depending on a kind of fur and appointment for the purpose of the maximum usage of the area of skins, reduction to a minimum between curves and a regional waste [1] are developed.

Despite it at cutting a fur- half finished product, and also at furnish various fur details in furrier's manufacture valuable enough fur waste - parts of skins and a rag is formed in considerable quantities. To a rag carry slices of fur of the different form and the sizes.

It is necessary to underline that the term "waste" applied to parts of skins and a rag, especially such valuable kinds of a half-finished product as a mink, the astrakhan fur and other kinds, is not adequate to that value which they find after manufacturing of various fur products. The greatest value from a waste of a mink represent: tails and pads, astrakhan fur skins - a neck, lateral parts, a furrier's rag of valuable kinds of furs, astrakhan fur, astrakhan and karakul [2].

As practice and the analysis of scientific and technical sources shows, the most effective by working out of new models and products is use of principles of the combination theory, which was widely adopted in design.

It is accepted to understand a universal methodical principle of creation of multiple object as combination theory from certain quantity of repeating elements of any level of complexity [3]. And, numbers, points, figures, pieces, and at designing of products various details, decor elements, etc. can be object elements.

In the fur industry the combination theory can find wide application as well for drawing of ornament of a surface of products. Using combination theory principles at designing of products, it is necessary to generate a data file with set of the blocks providing combinatory transformation of elements in individual system-model of clothes. In the given work data file formation was spent on stages:

- a finding of possible configurations of details on the basis of the analysis of analogues of products of modern assortment of products (for example, a children's fur coat);
- allocation from created many parts expedient quantity of elements for the further designing (the typical, unified and original details);
- the decision of a combinatory problem in the form of algorithms and the computer programs.

By working out of sketches of new models and assortment lines of some fur products from a fur rag two versions of combination theory were applied: on a plane the combination theory which has received in design also the name «ornamental combination theory» and combinatory Formation of an image (KF).

It is recommended to use following receptions of an ornament of a surface:

- the combinations of details made of various kinds of fur;
- application of various configurations of elements (templates of skins), parts of skins (paws, a semifurrier's rag).

For realization of principles of combination theory at designing of products from a waste of a pushno-fur half-finished product (FHFP) the information on them is systematized. The analysis of waste FHFP is made on the basis of studying of the literature and experimental sorting of a fur rag in the conditions of OOO «Original Textile and Print» Tashkent. Studying of a waste of fur of a mink, astrakhan fur, a rabbit and a muskrat has shown that the area of a tail of a mink on the average makes  $85,92 \text{ cm}^2$ , the area of a paw of  $29 \text{ cm}^2$ . The area of a pad of astrakhan fur on the average makes  $99,95 \text{ cm}^2$ , the area of a rump of  $60 \text{ cm}^2$ . The average length of a tail is equal  $13,77 \text{ cm}$ , width in a bottleneck of  $3,06 \text{ cm}$ ; average width of a pad of  $5,68 \text{ cm}$ , length  $5,18 \text{ cm}$ . Squares have been cut out from a pad by the area  $5 \times 5 \text{ cm}$  for formation of ornaments (fig. 2).

### II. CREATION OF AN ORNAMENT

Creation of an ornament of surfaces by way of "ornamental combination theory" can be carried out in two ways: an impregnation of patterns in the field; dense filling practically without intervals and backlashes) all space. In our research schemes of creation of plates from the cut out tails and pads of a mink have been generated. The plate is sewed of a fur rag a quadrangular piece, has standard size, for example  $20 \text{ cm} \times 20 \text{ cm}$ ,  $20 \times 30 \text{ cm}$  or other

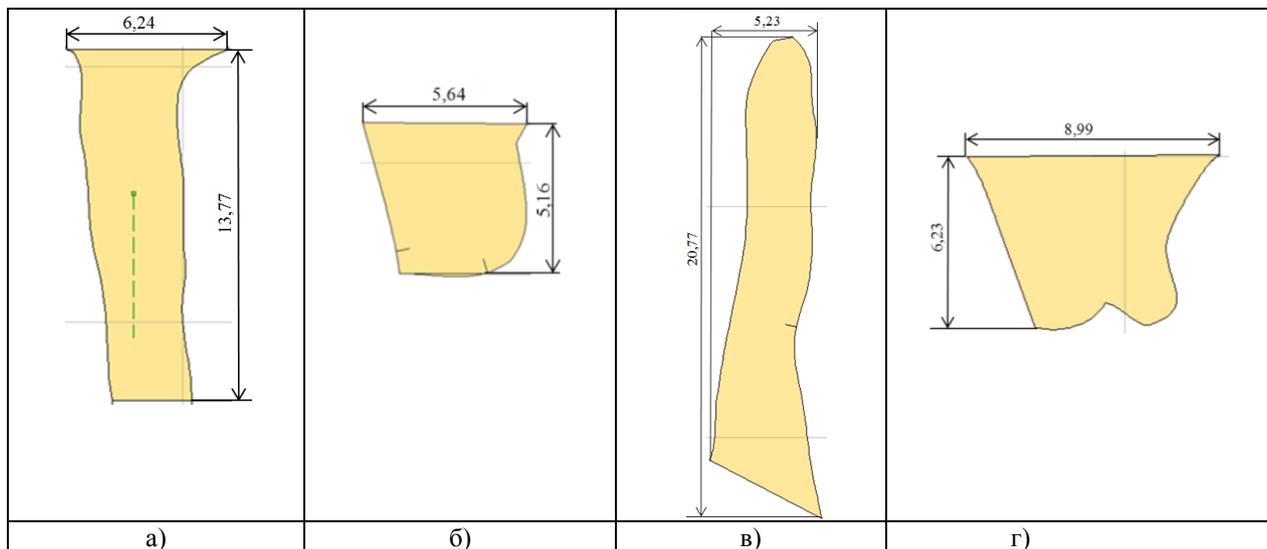


Fig. 1. The scheme of measurement of a tail and a pad of a mink (a and б), a rump and an astrakhan fur pad (в and г)

With use of waste FHFP the ornaments which elements consist of the elementary geometrical figures (a square, a rhombus, a circle, a triangle) and the figures having a difficult configuration are developed. New schemes of packing of paws and tails for creation of integral plates are received in the automated mode «Gemini CAD».

Examples of ornamental compositions of plates created of a tail and a pad of a mink are shown on fig. 2. As the module it is taken шестигранник (honeycombs), a rhombus, a fur-tree. Results have shown possibility of reception of various receptions орнаментации to a surface of details on the computer. At ornament creation following receptions of graphic construction is used: a variety of scales, various turns, movement of elements under the certain scheme.

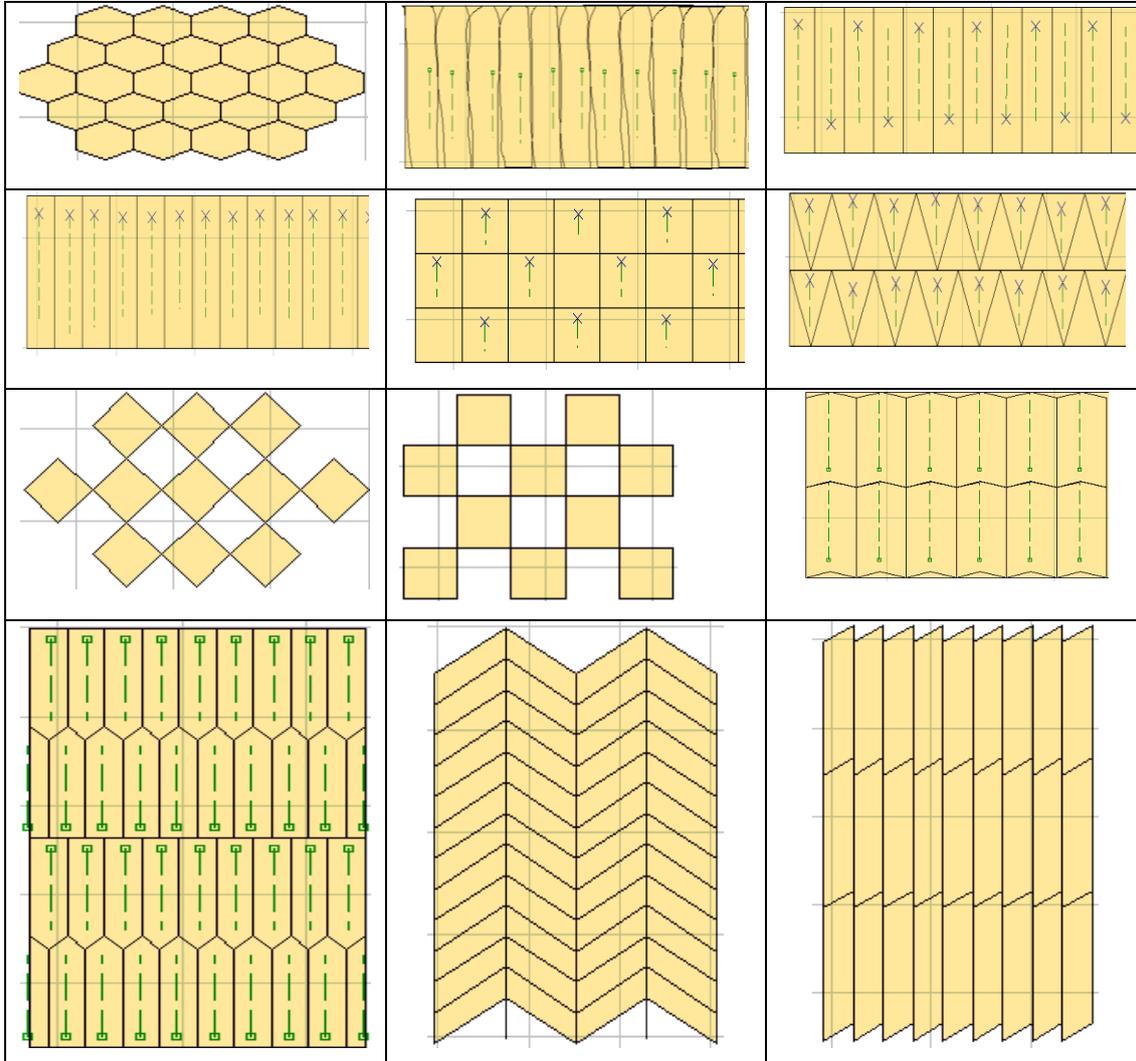


Fig. 3. The schemes of ornamental compositions formed of tails of a mink

By researches it is revealed that designers creating ornamental compositions and models from a rag not only try to hide use of a waste, on the contrary multi factor use for creation of new compositions. Combine not only different sites of fur, but also a waste of a different kind of the fur, different colour, in the length of pile, shine, in the sizes. For creation of ornamental compositions different slices of fur specially paint in other colours [2].

The developed elements of an ornament can find application at dressing of separate sites of fur products (a board, a collar, a product bottom), accessories and other kinds of products.

The received results have allowed to generate information fund for combinatory формобразования products from a waste. Combinatory shape formation allows to carry out volume designing (3D) clothes and modular designing by parametrization. As the base form the model of a children's coat is chosen from a fur rag (fig. 3).

Form designing was carried out with use of the details of various configurations with the same name and the sizes, an arrangement of lines of details of various configurations and the sizes, an arrangement of lines of partitioning of details, etc. Practically it is reached by shift of the unified details and cuts of details and the sizes, an exception of one elements and introduction new, change of materials, its invoices and colour, etc.

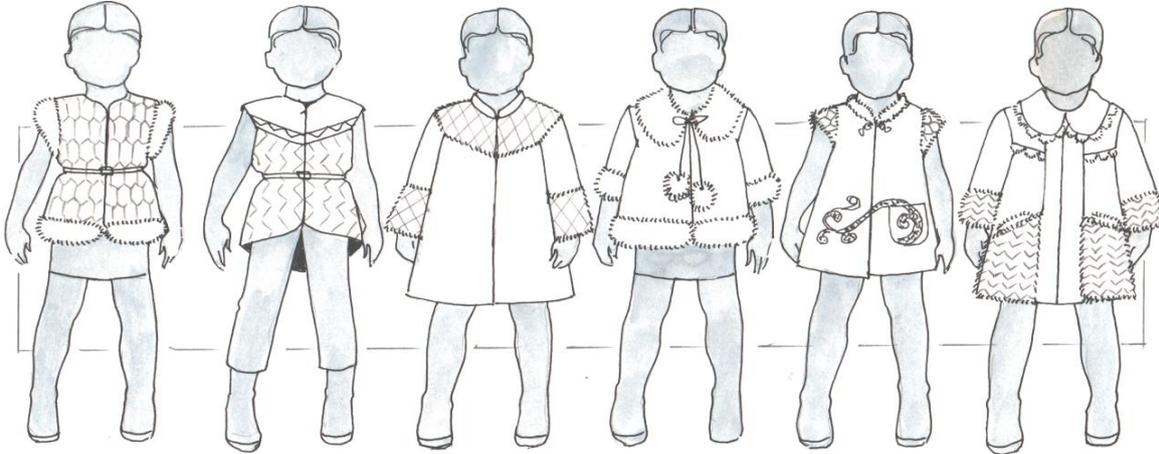


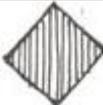
Fig. 3. Appearance outline collections of models

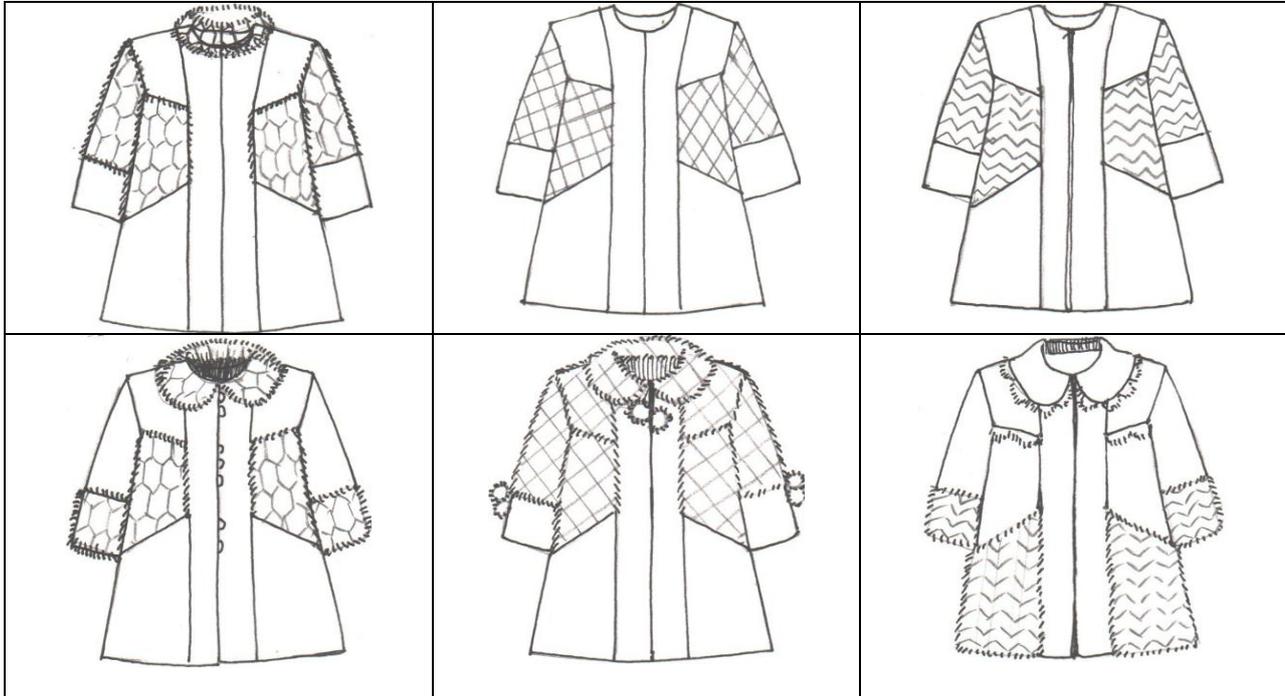
The matrixes which elements are base forms of a camp and the coquette are developed for realisation of principles combinatory формобразования at designing of children's fur coats. In tab. 1 as an example the matrix shape formationa children's coat from the created ornamental compositions is resulted.

### III. CONCLUSION

Realisation of principles of combination theory creates the best conditions for creation of new models and kinds of products on the basis of the developed information files, provides high efficiency of use of pushno-fur half-finished products and their waste, possibility of the coordination of offered sketches of the customer, reduces time of search of the help information in the big files of graphic archives with use of computer technics. The developed elements of an ornament can find application at dressing of separate sites of fur products (a board, a collar, a product bottom), accessories and other kinds of products.

Tab. 1  
Fragment of a matrix outline collections of models of children's coats

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