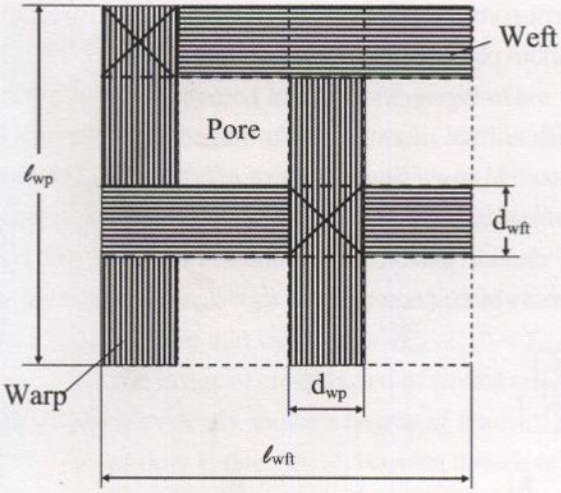

Fig. 2. Geometrical model of Novikov.

Smirnov (1960), on the basis of law of change of filling of a woven fabric with a yarn in connection with change of its density, considers, that the greatest air permeability the woven fabrics of the fifth (average) phase of a structure will possess at identical density on a warp and a weft.

Surnina (1973) considers necessary to define porosity of a woven fabric in view of crumple of threads and density of a woven fabric:

$$P_{CF} = 100 - 2a_{wp}D_{wp} - 2a_{wft}D_{wft} + 0.01 \times 2a_{wp}D_{wp}\,2a_{wft}D_{wft}, \quad (6)$$

Where: D_{wp} and D_{wft} - density of a woven fabric on a warp and a weft;

$2a_{wp}$ and $2a_{wft}$ - thickness of warp and a weft threads (a greater axis of an ellipse).

For reception of pores of square form Surnina recommends to project a woven fabric of the fifth phase of a structure with threads of a warp and a weft of identical thickness with identical density of an arrangement in a woven fabric, and for reception of the extended pores along threads of a warp considers necessary to project a woven fabric within the limits of 6-8 orders of phase (lengthways a weft: 2-4 orders of phase).

Militký and Havrdová (2001) offered a simple model (based on the coefficient of variation and spatial autocorrelation) from prediction the air permeability of composite textiles of multiple layers and proposed the technique for evaluation of permeability uniformity from local measurements of air permeability on the rectangular array of spots.

Çay *et al.*, (2007) propose to predict air permeability of the woven fabric based on three basic structural parameters of the fabric, namely the warp and weft density, and mass per unit area. The proposed method has been employed for the prediction of the vacuum-drying process efficiency (water content remaining in the fabric after vacuum drying) with equally satisfactory results.

The review of publications specifies on full identity of views of all authors concerning necessity and the importance of definition of porosity and air permeability of woven fabrics. Distinction is observed only in methods of an estimation of size permeability.

The real size of porosity of a woven fabric depends not only on geometry of pores, but also from physical properties of threads. Smooth threads from filament's fibers show small resistance to movement of an air flow, water, firm or liquid substances. Fleecy threads from short fibers significant resist to any external movement of any substances by means of the acting ends, loops of fibers soft or rigid to a bend. Size of differential air pressure, temperature, humidity, etc. concerning two faces of a woven fabric it will be natural to influence size of permeability of a woven fabric. In each concrete case these conditions of use of a woven fabric will be various. Therefore in advance precisely to define size of porosity of a woven fabric it is possible only under standard conditions of testing. However, for real diverse conditions of use of a woven fabric it will be only approximate size. To consider all the factors influencing on size of porosity of a woven fabric with reference to concrete conditions of its use, there is no opportunity.

How to operate to the designer during designing new structure of a woven fabric? On what to be guided? What to take for base?

The answer is obvious. The designer should be guided by the ground, basic, defining factor: geometry (the form, a configuration) pores and size of its area. At presence of a free air flow through pores reliability of this factor reaches 75-90 %.

In given article the simple way of achievement of an ultimate goal is offered to the designer: how it is possible to receive the rational form and necessary size of the area of a pore for effective air permeability, water penetration or