

splash points for the volume graphs, and calculate the "distance" between each pair of texts. The obtained values are naturally organized into a square matrix of order  $(k + p) \times (k + p)$ , viz.,

$$\|R((X), (Y))\| = \left\| \begin{array}{cc} \|R(X_i, X_j)\| & \|R(X_i, Y_a)\| \\ \|R(Y_a, X_i)\| & \|R(Y_i, Y_j)\| \end{array} \right\|$$

$$= \left\| \begin{array}{cc} R(X_1, X_1) & \dots & R(X_1, X_k) & R(X_1, Y_1) & \dots & R(X_1, Y_p) \\ \dots & \dots & \dots & \dots & \dots & \dots \\ R(X_k, X_1) & \dots & R(X_k, X_k) & R(X_k, Y_1) & \dots & R(X_k, Y_p) \\ \hline R(Y_1, X_1) & \dots & R(Y_1, X_k) & R(Y_1, Y_1) & \dots & R(Y_1, Y_p) \\ \dots & \dots & \dots & \dots & \dots & \dots \\ R(Y_p, X_1) & \dots & R(Y_p, X_k) & R(Y_p, Y_1) & \dots & R(Y_p, Y_p) \end{array} \right\|$$

It contains sufficiently complete information to make a hypothesis regarding textual dependence or independence. The dependence between the texts of the first group  $(X) = (X_1, \dots, X_k)$  and that inside the second group  $(Y) = (Y_1, \dots, Y_p)$  reveal themselves by the smallness (almost zero) of all entries in  $\|R(X_i, X_j)\|$ , whereas that between the texts of  $(X)$  and  $(Y)$  by at least one of  $\|R(X_i, Y_a)\|$  and  $\|R(Y_a, X_i)\|$  consisting of small numbers, i.e., "being close to zero".

Thus, we can generally construct four frequency histograms for each of

$$\|R(X_i, X_j)\|, \quad \|R(X_i, Y_a)\|, \quad \|R(Y_a, X_i)\| \quad \text{and} \quad \|R(Y_a, Y_j)\|.$$

For example, let them be of the form shown in Fig. 38, which means that the texts  $X_1, \dots, X_k$  are independent of each other,  $Y_1, \dots, Y_p$  are also independent, whereas  $(X) = (X_1, \dots, X_k)$  is dependent on  $(Y) = (Y_1, \dots, Y_p)$ .

The method efficiency was demonstrated by us above with the example of "confusion" period texts. Note that our method permits us to process extremely large samples of information, which is especially important in discovering intrinsic dependences, and that we discovered all the earlier-known dependences between certain of the above-listed "confusion" texts, revealed by the classical methods for primary source analysis. Besides, we also obtained certain new results, e.g., "*Povest' o chestnom zhytii tsarya Fyodora Ivanovicha*" reveals an interesting dependence on the other texts of the "confusion" period.

The suggested method also permits us to solve some other problems, e.g., it may happen that the large matrix  $\|R((X), (Y))\|$  is "strongly asymmetric", i.e., for example, the elements of  $\|R(X_i, Y_a)\|$  are much greater than those of  $\|R(Y_a, X_i)\|$ , which may indicate the "dependence direction". The texts of the group  $(X)$  are then dependent on those in the group  $(Y)$ , but not vice versa, which can point to the fact that those from  $(Y)$  served as primary sources for  $(X)$ . In other words, the texts of  $(Y)$  became the components of later texts from  $(X)$ . Meanwhile, all (or almost all) local maxima of the texts in  $(Y)$  were preserved, and new local maxima of the texts in  $(X)$  were added. Thus, we see that our method permits us, at least in principle, to foresee the "dependence direction", i.e., roughly speaking, "who copied whom".