simple mathematical apparatus. But if this task is related to the requirement "obtained output should be as *close* as possible to the *ideal* one," then the evaluation of functional efficiency achieved requires the development of a rather sophisticated apparatus capable of determining a degree of "closeness" among different outputs.

So once more we call attention to the fact that with regard to the availability of tasks and requirements in the IR system we are, in essence, talking about a new element of a system structure—an element that provides a more comprehensive satisfaction of IN through consideration of its complementary components. The proposed method of incorporating this element—that is, the preparation of a list of tasks and requirements for them—can be easily realized and does not entail any considerable costs. It is also true that in various cases the quality of the realization may be different and eventually will be determined by the improvement in the user's service. For this reason, in the future it may be reasonable to create a type of procedure for the development of the proposed system element. However, the development of this system element constitutes only a part of the work. The following question arises: How can we practically interact this system element with other system elements and especially how can we automate this interaction? Of course, specific methods for the consideration of possible requirements will have to be developed. Nevertheless, we present as an example one of the methods developed that is suitable for the two tasks mentioned previously, namely, "Development of new methods . . ." and "Review preparation." As pointed out earlier, the first task provides for finding documents containing new ideas (approaches) contributing directly to the "development of new methods . . ." whereas the second task primarily requires the system to find those documents that contain descriptions of the most known and promising methods among existing ones. We will start from the fact that in the first case tougher requirements should be imposed upon the relevancy of found documents (based on the requirement for the first task), whereas in the second case such requirements could be much less stringent (based on the requirement for the second task).

Note that specific methods depend, to a large degree, on the approaches adopted in a system for organizing other system elements. In the given case, when solving a formulated task, we will consider the most typical existing IR systems—the systems that use Boolean search. Moreover, we will only consider automatic methods of taking the specified requirements into account. We believe it is reasonable to take into account the requirements given in the example at the stage of constructing a query formulation, that is, it is reasonable to form different (required) outputs from different query formulations. All of the previously listed conditions can be taken into account in those IR systems that use the algorithm for the automatic construction of query formulations described in Chapter 7 (Frants & Shapiro, 1991). The given algorithm provides a very important possibility for our situation, namely, this algorithm is suitable for con-

a particular user the retrieval should be carried out on the basis of the user's understanding of a task, that is, using those requirements that the user designated in a typical task list or formulated as ones resulting from the given task, but only if realization of such requirements is feasible. For example, a requirement for obtaining output containing no fewer than 150 relevant documents may be impossible to meet, in principle, due to the lack of such a quantity of relevant documents even in a relatively large collection of documents.

It seems reasonable to include additional "feasible" requirements in the list of available typical tasks because they can provide other users with better insight into what is concealed behind the formulation of a corresponding task. In this case, some requirements may be mutually exclusive, as, for example, the requirements for retrieval results considered in the previous case when a collection of documents contained, say, 20 relevant documents. This, however, should not create problems because a user choosing a task from a typical task list should be able to select the most suitable task.

Note that practical experience shows that when considering if specific requirements follow from a given task some requirements are agreed on by the majority of users and some requirements are chosen only by a small number of users. Hence, in practice when using list of typical tasks it is possible for each task to determine (and isolate) a corresponding set (or sets) of requirements that are most often pointed out by users. The set (or sets) involved will be called a typical configuration (configurations) of requirements. From our standpoint it is reasonable to define, in connection with each task, two variations of typical configurations of requirements: a typical configuration of requirements for organization of the retrieval process and a typical configuration of requirements for its results. It is then possible to identify (for example, with a special mark) these configurations of requirements in a list of typical tasks, because such information may be helpful for a user.

Next we point out that the development of typical configurations of requirements assumes both the development of new methods and the updating of existing methods of information retrieval. For example, we recall from the requirements pertaining to the task "Review preparation" that for this task it may be advantageous to use a "broader" glossary in the query formulation than would be needed for the task "Development of new methods. . . ." This in turn may lead to the differences in methods of constructing query formulations within the limits of one system. This example illustrates, in essence, how requirements effect the IR system construction.

It is also a fact that the problem of defining typical configurations of requirements affects the problem of evaluating the functional efficiency of information retrieval. For example, if the task "Development of new methods . . ." is related to the requirement "obtained output should contain no more than three (but only relevant) documents," then the evaluation of the functional efficiency achieved is sufficiently transparent and requires the construction of a