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IDENTIFICATION AND FORMULATION  
OF PROBLEMS FOR OPERATIONAL RESEARCH

(PAPER FOR PRESENTATION  
AT THE MARITIME SURVEILLANCE SEMINAR  
TO BE HELD AT OS NORWAY 30 MAY - 1 JUNE 1979)

by

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IDENTIFICATION AND FORMULATION  
OF PROBLEMS FOR OPERATIONAL RESEARCH

In many areas of government and industry, operational research makes a regular and continuing contribution to the planning and conduct of operations. In most cases, OR is applied to problems for which the objectives are clearly identified and for which there are agreed measures of effectiveness. In these circumstances it is usually possible to indicate preferred strategies, optimum methods, or least-cost solutions.

However, before problems can be formulated in the well-defined manner suitable for operational research or systems analysis, it is necessary to know quite a lot about their nature, and to agree on objectives and priorities. And, it may be found that solution of the problems requires data that has not yet been collected. Thus, before one can expect the useful application of OR it may prove necessary to spend a considerable effort in defining the problems, formulating them in a manner amenable to analytical treatment, and making arrangements to collect information not heretofore available.

The two subjects of our conference are at different states in this process. Maritime surveillance has been a military problem for a very long time, but the requirement

to provide surveillance of fisheries has become much more important in the last few years, due in part to the evident need to conserve the stocks of fish in the face of very much enlarged efforts at mass harvesting of limited resources, and in part to the extension of national jurisdictions from three or twelve mile territorial waters out to two hundred mile economic zones. The regulations to be enforced are very new, the machinery to enforce them is only now being designed. But the problems are of a type that should be amenable to useful operational research.

At the present stage, we could not expect to hold a conference of the type common in well-established areas of research, with detailed reports on completed studies and thorough citations of related research. But this does not mean that we cannot have a useful and productive conference. On the contrary, this may be the ideal time to clear our minds as to what it is we are trying to accomplish, what should be our measures of effectiveness, and what data we should begin to collect in order to carry out useful analysis in the future.

With search and rescue the situation is not quite the same. This activity has been going on for a long time already. Some of the methods and procedures have been studied quite intensively for military purposes. But it is

probable that a comparison of experience and an exchange of ideas will be useful in improving all of our methods. Moreover, the appearance of new devices may offer the opportunity to increase the efficiency of search and rescue, and we wish to be alert to the need to evaluate them.

So, let us not feel disappointed if this conference ends without a whole set of reports solving all of our problems. We should not expect this at the stage we are in today. What we should hope for is progress in the steps that need to be taken preliminary to systematic analysis of our problems.

The problems of maritime surveillance and of search and rescue are important to Norway, to Canada, and to Iceland. They are activities in which all our interests are in common, and because of our geographical situations they are very similar in character. There is a great opportunity for cooperation, and every reason to hope that this conference will represent a milestone in such cooperation.