

SOCIAL DIFFICULTIES
VERSUS
SOCIAL PROBLEMS

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A B S T R A C T

The opening address at the 1976 International Conference on System Dynamics points out that today's social ills are diffuse difficulties rather than clear-cut problems. Remedial action must start with attempts to clarify the problem, and develop alternative comprehensive strategies that consider a wide segment of society and also the long-term future in an open minded fashion. System dynamics may serve as a tool for broad policy analysis of this kind.

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Opening address at the 1976 International
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Mankind has always been confronted with an apparently unsurmountable barrier of difficulties. There have been difficulties connected with hunting or growing sufficient food, putting up a defence against hostile groups, reducing the drudgery necessary to gain a certain goal, and in finding means to pacify wrathful gods who constantly meddled in the affairs of men. Development -- or what we call progress -- is the result of continually solving the most immediate difficulties which society has been confronted with through all times. Examples are the development of highly productive, sound, agricultural methods; the use of fossil energy to reduce human toil; the development of social forms which provide individual security and possibilities for all; the disclosure of natural laws which render the whims of the gods less stupefying.

Today society is still confronted with the same barrier of difficulties. The barrier often seems more like an unassailable bulwark, but there is little reason to believe that present-day problems are greater than former hindrances to a continued rise in well-being. But the difficulties are of another nature. Previously, we were faced with problems related to the solution of concrete tasks with a clearly-defined aim: to improve material conditions within a short space of time. Questions were of the nature: how to procure enough food for the family next year; how to find a way of constructing a road over a river; how to regulate the use of limited grazing areas, etc.

Today, at least in the industrialized countries of the world -- many of these concrete problems have been solved. But the result is far from a problem-free Utopia. On the contrary, a new generation of difficulties, in many ways more diffuse than their forerunners, have been disclosed. In character they are not so purely technical.

I am making a sharp distinction between a difficulty and a problem. A difficulty is a sphere with diffuse limits where it is felt the state of affairs could be improved; a problem is a much more clearly identified hindrance which must be overcome. A clearly-defined problem incites to efforts to solve it, while the existence of a difficulty leads to passive, complaining discontent.

As I see it, the diffuseness of today's difficulties in the developed world arises to a large extent from the fact that the aims are no longer as clear-cut, now that the short-term, material problems have been resolved. As a consequence, it is not always immediately obvious what the problem is, even though there is no doubt that difficulties exist.

The sociological, organizational or political difficulties often dominate because our technical insight has enabled us to overcome so many of the technical problems. As an example, aviation safety now appears to be more dependent on the whims of the highjacker than on the engine's reliability. It is, I think, generally accepted that the introduction of atomic energy on a large scale in an industrialized nation is no longer purely a technical matter -- it is not only the question of whether the country can manufacture pressure tanks, pumps, and control systems which has bearing on the utilization of atomic energy -- it is just as much a social problem, namely how to convince sceptical groups of the usefulness and long-term safety of unconventional sources of energy before such sources have been widely employed for a long time.

The difficulties of the industrial countries are related to questions such as employment for the entire population in meaningful jobs; inflation; that a steadily increasing proportion of the national wealth is being expended in the social sector; continuing drainage of the population from rural districts and concentration in confined areas; transfer of power from politicians to bureaucrats and experts; general lack of initiative and willingness to become involved; terrorism, and rejection by sizable groups of the established objectives of society; lack of national freedom of action and tendency to isolation; hostility to industry, etc. It is this kind of difficulty our generation must face in order to promote what we call progress. I have confined myself to national examples -- in the international arena there exist similar complexes of difficulties of a diffuse nature.

It seems to me that one of the reasons why the difficulties seem diffuse and evade quantitative analysis is because there are diverging opinions on

- what are the basic aims for future development and, consequently, what is the central problem,
- what lies behind present developments and, consequently, what will be the effect of any action taken;
- what secondary effects any action taken will have in other sectors and, consequently, what in fact is a "good" measure.

If an analysis is not focused on a well-defined problem, one cannot proceed far toward understanding the underlying causes and possible secondary effects before complicated boundary problems are encountered. Without a clear-cut definition of the problem, analyses of today's difficulties assume unmanageable proportions. It is therefore absolutely essential to begin by establishing the problem, either through agreement on principles or more pragmatically.

The main difficulties of today appear to me to have the following characteristics:

a) They are of such a nature that it becomes increasingly more naïve to believe that they can be eliminated by small adjustments in existing policy. There seems to be a growing need for a new way of thinking when dealing with such difficulties: first a new perspective, then a reformulated problem, and finally, a comprehensive formulation of alternative strategies for solving the problem.

- There are, for example, few who believe today that an increase in health service personnel in Norway by 2000 nurses, provision of 50 nursery schools, and 33 old people's homes would in any way represent a complete answer to the challenge which the increasing need for efforts in the social sector represents.

To summarize: peripheral efforts -- patching and mending -- do not seem adequate to meet the difficulties of today.

b) It seems to be less fruitful to confine thinking to narrow sectors when attacking our difficulties. Formerly, the various sectors were so isolated that problems within one sector could be solved without causing ripples outside. Today, we are forced to take a broader view.

- For example, pollution control equipment on cars drain much of the engines power. This "solution" of the exhaust gas problem only aggravates the energy problem.
- As another example, procurement of an inexhaustible source of energy would create an enormously difficult organizational problem, namely to confine the use of the energy to a level which would not affect the earth's thermal balance to an intolerable degree.

To put it briefly: sector-bound thinking and the isolated specialist's era appear to be things of the past.

c) It seems necessary to a steadily increasing extent to weigh the short-term effects of a measure against the long-term effects. It is in fact a matter of weighing the immediate advantages against the highly probable, but nonetheless uncertain disadvantages in the long run.

- For example, a central question in Norwegian oil policy is this: By accelerating the rate of allotment of drilling areas in the North Sea, Norway could inflate optimism and boost activity in the North Sea, thereby promoting the placing of contracts for off-shore equipment at Norwegian shipping yards and related industries in a way which in a relatively short time would solve today's unemployment problems in these branches. Taking a long view, however, such accelerated activity would have undesirable effects in the form of rapid changes in the structure of Norwegian industry (in particular, closing down of less strongly established firms in outlying districts) and would curtail the period in which Norway derives oil revenues.
- Here is another enigma where short-term and long-term analysis give diverging results:

If, by increasing productivity, more resources can be made available to resolve the "unsolved problems in the social sector," the intended effects could be achieved in the near future. But if it is so, as many critics claim, that the social problems (unemployment, criminality, premature retirement, alienation) in reality are caused by stress and effectivity in industry, the long-term effect of increased productivity will be still more "unsolved problems."

In brief: we can no longer confine ourselves to short-term analysis.

How then, should we tackle these difficulties, assuming that my analysis of their characteristic features is correct? In the first place it seems essential to approach them with an open mind, for even though the remedies must not deviate far from today's realities if they are to be realizable, it must be only right to identify and appraise potential broad policy alternatives without unnecessary ties to existing conditions. Even though it has been almost religiously claimed to be advantageous to increase exports, this is no longer necessarily the only policy alternative in questions of improved national economy, bearing in mind fluctuations in international trade.

In the second place, holistic outlook must be strived for in dealing with the sort of difficulties I have mentioned. A minimum requirement should be that experts from widely different sectors cooperate intimately and really communicate with each other and with the policy analyzers. The individual industry's problems are no longer solved by a process engineer in an isolated drawing office. Questions such as residential environment, education schemes, advancement possibilities, cultural milieu also come into the picture. Communication between sector experts has proved hard to bring about in practice, and this, as I see it, represents a major challenge with respect to that barrier of difficulties which surrounds society today.

In the third place, a more long-term perspective is needed both in connection with problem identification and especially when outlining the broad policy alternatives which are available.

Analysis of this kind where the diffuse difficulties at issue are tackled

by first defining the problem and then the alternative strategies are presented in a wide and long-term perspective I will call broad policy analysis.

It is here opportune to define precisely the difference between broad policy analysis and long-term planning. Long-term planning is usually understood as an activity which concludes with a firm plan for future courses of action. Broad policy analysis entails the outlining of possible patterns of development so that knowledge of possible consequences of measures taken can influence today's decisions. Broad policy analysis does not end in a plan, but in understanding which can form a basis for the planning process. Broad policy analysis is not a prediction of what will actually take place in the future, but an endeavour to increase the understanding of how intervention will influence the course of development. The future is, at least to some extent, in our own hands. It is shaped by today's decisions.

Broad policy analysis of the kind I am talking about will typically be of some benefit to a large number of users. Only in a few cases will the payoff for the individual be sufficient to warrant that he alone bears the cost of the analysis. It will therefore, as I see it, be a national task, financed by governmental funds, to ensure that a sufficient number of broad policy analyses is performed. This conclusion is supported by the fact that broad policy analyses are more of a problem-stating than of a problem-solving character -- the most important aim is often to formulate the problem in such a way as to throw it into sharp relief and provide inspiration for finding concrete, feasible solutions.

To my mind, attempts to solve the difficulties which face us today should be made in two phases. The two phases are of such a diverging nature that they would seem to warrant a division of work. The first stage is the broad policy analysis in which the aim is to determine what is a productive point of attack ("problem") and to outline what can feasibly be gained through various, broadly

defined policy alternatives. The second stage is not embarked upon until the matter has been debated on the political level and agreement has been reached on aims, problem(s), and the general policy to be followed. The second phase consists of working out in detail the technical and organizational measures necessary to realize the chosen strategy.

Let us take as an example the difficulties connected with an expansion in the social sector. The first stage of the analysis could result in the choice of the increasing amount of man-power absorbed by this sector as the crucial problem, and one solution put forward as a broad policy alternative could be to increase the efficiency of personnel employed in hospitals and institutes. The adoption of this strategy would involve, as a second phase, the development of more rational technical equipment for hospitals, time-saving data systems for the registration of patients' treatment, and labour-saving routines for doctors.

As I have said, it was much easier in times past to see what the problem was, and in which direction a solution should be sought. As a rule the situation could be likened to a shoe pressing on a sore toe. The choice of remedies was easy -- either to remove the toe or stretch the shoe. The need for phase 1 -- to define the problem and outline alternative strategies for its solution -- was much less. But the old way of thinking still lingers. We are still not used to living with diffuse, unlocalized nerve pains which cannot be treated until a thorough diagnosis of the causes has been made.

What part can formal system analysis play in this two-phase set-up designed to meet today's difficulties? The first phase calls for a holistic outlook, presentation of the difficulties from different points of view, attempts to weigh up the important causal links. It involves outlining time schedules, giving a prognosis of the effects of various measures, pointing out their short-term and long-term consequences and intimating where the sectors are

interdependent. In this work I feel that the system analyzers can play an important part, provided they are able to communicate with sector specialists and practitioners; can integrate the fragments of knowledge they thereby derive, and present the results in a comprehensible form. In the second, more detailed stage of the work, I can see less use for the system analyzer. Here detailed practical work is required to find the best solution to a new problem, given a clearly defined aim and boundaries for the solution. This work will mainly have to be performed by people with specialized knowledge -- technicians, engineers, psychologists, marketing experts.

The difference between the problem-stating and the problem-solving activities is clearly seen if we consider the results of the two phases. The first stage will lead to the pin-pointing of a problem which is considered important and an outline of the principal conceivable insight. The second activity will yield concrete results, such as a detailed description of technical and organizational plans on how to achieve a certain aim. The result can be sketches, patents, human experience.

Our product-minded society has a tendency to overlook the first stage, probably because it has been confronted with practically the same problems for generations -- insufficient economic activity and the threat of war -- and all efforts have been devoted to solving these concrete problems.

There is little doubt that activity in the field of broad policy analysis can have a tremendous influence on the way in which current difficulties are handled. The violent effect of simply putting a new aspect on the trend of development is well illustrated by the outcry which has arisen in later years in connection with New-Malthusianism. Revival of the idea that the material resources of the Earth are limited has had a strong and often paralyzing effect on people's way of life. In the same way, to crystallize and put forward a clearly-formulated problem makes a deep impression. A clear formulation

tends to draw public attention to the problem at the expense of other less clearly formulated problems which may well be of equal importance.

The one-sided emphasis on physical limitations in "Limits to Growth," instead of for example laying weight on the distribution problem on a global scale, again serves as a good example. It is, of course, quite obvious that through the selection and tendencies in outlining the chosen broad policy alternatives, the reactions of society to the problems in hand are influenced to a large degree.

Since it is clear that broad policy analysis has the power of influencing the people's decisions and actions, the important question arises: How "true" are these analyses? How correct is the chosen perspective? How valid is the given definition of the problem? How probable is it that the broad policy alternatives will lead to the prophesied results?

These questions are far from trivial, as discussion in recent years on the validity of mathematical models has shown. The scientific method usually reveals shortcomings when a theory or model built over a social question is put to the test -- simply because it is impossible, or at least prohibitively expensive and time-consuming -- to perform the necessary experiments to establish an adequate model. In addition, the low accuracy of any numerical data and the possibility for diverging interpretations of the material give a confusing picture. The use of "criterion of validity" usually adopted in the case of policy analysis for clients, whereby the model is adjusted until the user believes in it, cannot be employed when the analysis concerns the general public.

I cannot see any simple way out of this morass, other than to inform the general public of some obvious "truths" concerning the validity of broad policy analysis. First and foremost, it must be remembered that the ambition of broad policy analysis cannot be to convey the "truth", but to provide the

best possible picture of the situation in the time available before an important decision on policy has to be made. Secondly, one must always be aware of the element of subjectivity which is bound to creep into any policy analysis. Thirdly, one must ensure that the analyzer does not make assertions without at the same time stating his assumptions, and that both assertions and assumptions are intelligible to the anticipated user of the product. An ideal way of achieving these aims seems to be to involve the user in the analysis process.

A more radical solution would be to substitute hypothesis testing by individual defence of own propositions. Instead of performing presumptive, scientific, neutral analyses, weighing the arguments in favour and against, it might be better to let the holders of different opinions put forward their own biased point of view. I know that this has been tried in Denmark in connection with the introduction of industrial atomic power, and it took place in Norway during the campaign by those in favour of and against Norway becoming a member of the Common Market. I am, perhaps, thinking of more disciplined activity where the competent advocates of certain opinions are charged with giving their reasons and outlining the broad policy alternatives which would follow as a consequence, in a lucid, conscientious way.

To the extent that system dynamics can contribute to increased understanding of the difficulties society is faced with today, as a tool for broad policy analysis along the directions I have outlined, with open holistic and comprehensive treatment of the problem, with emphasis on the first phase of the approach to the difficulties and with increased conscientiousness in the presentation of the conclusions, system dynamics represents a possibility for meeting a serious, declared need. To the degree that this meeting on system dynamics methods can add to the usefulness of system dynamics for such purposes, I wish you well in an important task.