

FOR RELEASE
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NEW GOP PLAN FOR PUBLIC PROBLEM SOLVING

WASHINGTON...44 Republican House Members today introduced what they termed "a revolutionary new concept to deal with the complex problems of a modern society -- such as water pollution, the growing crime rate, traffic congestion and slum housing."

The GOP plan envisages the eventual farming out of these immense problems by government to private industry which would then use the modern "systems management" approach and technology to develop and administer a comprehensive solution.

As the first step, the Republicans filed legislation today to create a National Commission on Public Management to study the applicability of the systems management approach to non-defense and non-space public problems. The Commission would examine the techniques developed by the defense and aerospace industries for complex problem-solving and recommend how best they might be applied to equally critical domestic problems.

A companion Bill was also filed today by ten Republicans in the Senate.

The GOP Congressmen stressed that this is "an entirely new departure in American political thinking. We wish to see the free enterprise system with its new capacities engaged in the solution of public problems. In one sense the concept is as revolutionary in political science as the technological explosion has been in physical science. In another sense, the concept is as old as free enterprise and America itself."

The "systems management approach" relies on the capacity of the new technology to assemble, measure and use all the information that relates to a given problem -- and thereby to get one coordinated plan. In complex problems, the Republicans said, it may be the only way to achieve a comprehensive solution.

Spokesman for the group, Congressman F. Bradford Morse of Massachusetts, said that "the traditional problem-solving concept of Government and the Democratic Party simply won't do the job anymore. Appropriating money and shuffling papers in the bureaucracy should not be confused with problem-solving. The traditional Government approach to a complex problem is to divide it into manageable parts and to treat each of them separately. A comprehensive solution is thus impossible. The bureaucracy simply does not have the capacity to solve today's or tomorrow's problems -- but private industry with the new approach is rapidly developing that capacity."

The Republicans cited the magnitude of problems which are "not susceptible to the traditional solutions":

-- 10,000 U.S. communities will face serious problems of air pollution.

-- The demand for water consumption may exceed the available supply before the end of this century.

-- There are 9 million sub-standard housing units in the United States, most of them in urban areas.

-- Traffic jams cost the nation over \$5 billion each year.

-- Scientific and technical information is doubling every fifteen years.

"In all these areas," the Republican statement said, "and in education, in health services, in law enforcement, in the distribution

of public welfare -- the United States has within its grasp a completely new set of tools.

"The genius of the systems approach is its ability to bring order out of tremendous numbers of diverse elements and factors -- order that not only stabilizes but creates the conditions for progress as well.

"It is imperative to recognize the opportunity that this technology in private hands affords our society to solve gnawing and long-term social problems without relying solely on Government to provide the answers, the machinery, the manpower and the money.

"The best assurance that the progress of science will not mean the insignificance of man is to recognize the revolution in technology, to anticipate its growth, to assure adequate personal safeguards from its excesses, and to employ it for the betterment of man. We must not merely be awed by science; we must be inspired by it to summon equal creativity in the political and economic fields.

"The technological revolution has brought this challenge: Can our political creativity keep pace with the relentless march of science and with the mounting complexity of an increasingly urban society?

"The Commission we recommend would bring to bear on the management of public business the very best minds in private industry, government, labor and education. Its mandate is to answer two fundamental questions: How can new management technology aid us in solving problems that lie in the non-defense sector? What is the best way to take advantage of the opportunities these new techniques provide?"

In the Senate the Republican Bill was introduced by Senator Hugh Scott (Pa.) and co-sponsored by Senators Peter H. Dominick (Colo.), Gordon Allott (Colo.), Wallace F. Bennett (Utah), Clifford Case (N.J.), Paul Fannin (Ariz.), Jacob K. Javits (N.Y.), Thomas H. Kuchel (Calif.), Thruston B. Morton (Ky.), and John G. Tower (Tex.).

- 30 -

FULL TEXT ATTACHED

MANAGING THE PUBLIC BUSINESS

Mr. Speaker, Congress has over the past decade enacted a host of creative programs designed to solve our public, social, and economic problems. We have made important strides forward in education, health care, pollution control and urban development, but the dimensions of our remaining problems are staggering.

-- 10,000 of our nation's communities will face serious problems of air pollution.

-- the demand for water consumption may exceed the available supply before the end of this century.

-- There are 9 million sub-standard housing units in the United States, most of them in urban areas.

-- traffic jams cost the nation over \$5 billion each year.

-- scientific and technical information is doubling every fifteen years.

It is clear that problems of this magnitude are not susceptible to the traditional solutions. We must reach beyond our history for new ways to manage the public business effectively and economically.

We have available to us already a wealth of knowledge and technology in private industry. We have seen how new techniques of management analysis -- the so-called "systems approach" -- have streamlined our defense establishment and brought the universe within man's reach. We must now determine whether these techniques can help clean our water, educate our children and improve the quality of life in our cities.

We are today introducing legislation to establish a National Commission on Public Management.

This Commission would bring to bear on the management of public business the very best minds in private industry, government, labor and education. Its mandate is to answer two fundamental questions: how can new management technology aid us in solving problems that lie in the non-defense sector? What is the best way to take advantage of the opportunities these new techniques provide?

THE SIGNIFICANCE OF THE PROPOSAL

The technological revolution of our times has brought with it the capacity to solve the most difficult problems which modern society faces. And it has brought this challenge: Can our political creativity keep pace with the relentless march of science and with the mounting complexity of an increasingly urban society?

The Commission which we propose today represents merely the first step in an entirely new departure in American political thinking. We wish to see the free enterprise system with its new capacities engaged in and responsible for the solution of public problems. In one sense the concept is as revolutionary in political science as the technological explosion has been in physical science. In another sense, the concept is as old as free enterprise and America itself.

Systems management techniques and tools have given to the private sector a capacity for problem solving that the government has not yet developed. It is imperative to recognize the opportunity that this technology in private hands affords our society to solve gnawing and longterm social problems without relying solely on government to provide the answers, the machinery, the manpower and the money.

-2-

By engaging the private sector the government can employ the most modern technology available without expanding its own influence into the everyday lives of human beings.

We should not ignore the caution urged by those who see modern technology only as the precursor of a society of robots, where individual identity is subsumed in the mass production of everything from man's comforts to his personality. We can avoid that world, the world of "1984," only if we make the new technology our servant, and not allow it to be our master. The best assurance that the progress of science will not mean the insignificance of man is to recognize the revolution in technology, to anticipate its growth, to assure adequate personal safeguards from its excesses, and to employ it for the betterment of man. We must not merely be awed by science; we must be inspired by it to summon equal creativity in the political and economic fields.

Through basic systems management approaches, the increasingly serious and complex problems of water and air pollution can be brought under control. The new technology can test for pollution; it can anticipate pollution; it can provide the techniques to prevent and correct pollution. Using the systems approach society can measure today's needs against the supply for decades to come and can provide the formulas for conservation which can allow the citizens of today to take advantage of their resources without impairing the life of future generations.

The air and surface transportation problems of today are but nothing compared to the problems which can be predicted for tomorrow. Systems management techniques can be applied to the problems of urban transportation to permit the free flow of city workers to suburban homes. And only the use of systems management techniques and equipment can resolve the incredibly complicated problems of air safety and air traffic simultaneously. Our systems are barely adequate today, and it takes no prophet to know that the growth of air travel will continue on its sudden expansion.

Increasingly, the problems of urban housing, urban renewal, and urban development will be appreciated, as they should be, as continuing concerns of an industrial society. The application of systems technology and of the equipment upon which it depends can improve the efficient design of housing, can simplify the planning of housing patterns, provide for more efficient and rapid administration of housing development programs, develop testing systems to assure the maintenance of safe standards, and promise a life of greater ease and comfort in the home of every American.

In education, in health services, in law enforcement (and equally important in rehabilitation), in the distribution of public welfare -- in all these areas and more, the United States has within its grasp a completely new set of tools. We must proceed carefully; we must proceed with order. But we must proceed. That is the reason why we propose this Commission -- to survey the tools at hand and to consider their application to the problems which confront our society.

Three facts have led to this initiative. First, the domestic problems of our urban society are growing more awesome and complicated every day, and too many assume that only government can solve them. Second, there exists a technology for problem solving and administration which seems uniquely suited for application to these public problems. Third, that systems management technology is in the hands of U.S. industry, which in a fortuitous alliance with government can solve the problems within a framework of free enterprise. There is a need for political creativity now; and thus a need for the Commission we propose.

-3-

NEED FOR A NATIONAL COMMISSION

The tasks of management in both public and private enterprise have become more difficult and complex due to the very nature of the problems inherent in a dynamic and growing society such as ours and advances in science and technology. The problems of managing even the largest Federal programs of a generation ago were small compared to those of today. All levels of government -- Federal, State and local -- are finding it increasingly difficult to solve their complex management problems on a piecemeal basis, to a large extent because they lack the management techniques and skills that have been applied so successfully in private industry.

Although there are studies in progress dealing with the use of systems analysis in several specific non-defense areas, the questions of where the systems approach is most applicable and how it best can be applied are still largely unanswered. It is our belief that these crucial questions require the attention of a Commission, appointed by the President and the Congress, to include the best minds in the field of modern management technology. This Commission can complete a comprehensive study and investigation, taking utmost advantage of the assistance of such testimony and consultation from recognized experts in the field as can be obtained during its active life of 30 months.

Some of our distinguished colleagues have recently introduced legislation which would authorize the expenditure of public funds, either directly by Executive Departments or through grants to the States, for contracts with universities or other public or private institutions or organizations which would attempt to apply the systems analysis approach to public problems. We fully support our colleagues on the basic issue of stimulating governmental support for such endeavors, but we also believe that a national commission is required first to provide the overall analysis and informed recommendations needed by all governmental authorities who may have reason to use the systems approach in the future.

Initially this Commission must define the problems involved. Then it must determine the applicability of the many systems analysis and management techniques as they relate to a myriad of problems ranging from those relatively simple and local in nature to extremely complex national issues. Finally, it must recommend optimum means for developing government-private enterprise cooperation to encourage and support the techniques found to be applicable. Unless these crucial points are investigated thoroughly, we will not be able to provide guidelines for the many future applications of the systems approach, and instead we will be limited to trial and error procedures. We require a "conceptual definition" phase -- to borrow from Department of Defense terminology -- before we can move full speed into the implementation phase. This, in fact, is merely using good systems analysis procedure!

Technology will continue to expand, and the Commission should anticipate its growth. The Commission should become a repository of information on how the management techniques presently available have been applied, provide information and guidance to business and government through seminars, conferences and appropriate publications and encourage the best talent in government, business and the universities to study public management problems. It should consider how existing and new techniques can be fed into the legislative and administrative processes on a continuing basis. It should address itself to the question of how to ensure that new legislative programs provide for data that will make systems management possible and take into the account the necessary inter-relationships between programs and agencies.

-4-

NEW MANAGEMENT TOOLS

What are these new management tools? Although there is no completely accepted name or definition covering the whole area of new management technology, it is generally referred to as the "systems approach". The concept has been developed primarily by the Department of Defense, the National Aeronautics and Space Administration and the aerospace industry for the development and production of major weapon and space systems. Although the term "system" is by no means a new one, the high degree of expertise in this area now available within a sizeable segment of U.S. industry and the Federal defense and space agencies has only recently come of age.

The systems approach is a way of thinking about the job of management. It provides a means for arriving at the best solution to a complex problem or combination of problems by means of a logical process of identification and control of all their interrelated segments. The genius of the systems approach is its ability to bring order out of tremendous numbers of diverse and interacting elements and factors -- order that not only stabilizes but creates the conditions for progress as well.

The approach has two main features. First, the problem or problems to be solved are rigorously defined, in terms of performance objectives rather than in terms of product specifications or particular technologies. Thus instead of specifying the types of garbage disposal, sewage, or anti-pollution devices required to provide an integrated waste management system in a community, the system objectives would be defined in terms such as the desired purity of the water supply, the per cent allowable impurities in the air, and the convenience desired by the housewife in the disposal of solid waste -- all tied to a realistic cost and time schedule.

The second feature of the systems approach is its emphasis on the interrelations within a system. Rather than dividing a problem into manageable subproblems and solving each independently, the systems approach enables the managers to develop and implement a plan capable of achieving the entire objective. It provides for comprehensive planning, traces out the effect of any set of choices and decisions upon all other relevant decisions, and then arrives at the solution to the total problem. Thus the problem of water resources for any given area involves water sources, land use, urban development, waste disposal, and recreational facilities. Since each factor is so closely linked with the others, the problem must be looked at as a whole.

Systems analysis has been described as "a technology which applies the scientific method to the allocation of limited resources among a variety of competing demands. The goals of the system are defined (the train must arrive on time); the constraints and conditions are stated (cost or time limits). Systems analysis attempts to arrive at the optimum satisfaction of the goals within the stated condition."

The application of the systems approach and its related analytical tools to the solution of a large variety of national and local problems in the non-defense sector holds great promise for the future. The possibilities have already been recognized by a number of commentators.

The National Commission on Technology, Automation, and Economic Progress, in its February 1966 report, pointed out that, "There is a strong need for the development of systems analysis capabilities in individual branches of the Government and in Congress. Beyond this, there is the broader question of how these different intellectual resources, which are being employed primarily to deal with the programs of the agencies, can be coordinated and used for the analysis of the various social problems that confront us."

In addition to specific recommendations for the application of new technologies and management techniques in such areas as health care, transportation, control of air and water pollution, and housing, the Commission pointed out the need to improve the decision-making process which determines the priority of various proposals. The Commission said, "...such decision are often made piecemeal with no relation to each other -- vested interest are often able to obtain unjust shares, and -- few mechanisms are available which allow us to see the range of alternatives and thus enable us to choose with a comprehension of the consequences of our choices."

CURRENT EXAMPLES

Examples of attempts to apply these modern management principles to State and local affairs already exist.

The so-called "California studies" make up one such set of examples. In November 1964, the State of California announced its plan for the application of systems engineering techniques to four important public problems.

This plan was predicated on three primary considerations. First, national consideration was being given to the possibility of reduced Federal spending in defense. Second, California had a particularly large investment in the defense, aerospace, and electronic industries, and was therefore particularly vulnerable to a cutback. (These industries also provided the state with experienced practitioners in systems technology). Third, the State had a continuing concern with a number of problems: air and water pollution, crime, population growth and planning, welfare, education and so on.

Preliminary discussions between the Governor's office and industry leaders indicated that there was considerable enthusiasm for initiating studies to determine the feasibility of applying "systems engineering" and "systems analysis" to socio-economic problems. As the likelihood of reduced defense spending diminished, the focus of these discussions changed somewhat from "How can we help the distressed aerospace industry?" to "How can we make a new and broader use of available skills?"

Following a round of competitive bidding in which each bidder outlined the approach he would take and the resources he would apply to the study, the State of California awarded four \$100,000 study contracts to aerospace firms. The areas selected for study were transportation, waste management, crime, and information control.

The State of California is currently evaluating, with the assistance of the Ford Foundation and others, the results of these four studies. Preliminary evaluation indicates that it is feasible to apply the systems capability of the aerospace industry to socio-economic problems and produce meaningful and valuable results. In fact, California is so enthusiastic over their success that additional studies are being initiated to utilize the systems approach in analyzing land use in Santa Clara County and state-wide social welfare programs. The State anticipates conducting follow-on studies on a solid waste subsystem of an integrated waste management system, a statewide crime information system, and a federated statewide information system tying together all State and local agencies.

One can cite many other examples of systems analysis applied by forward-thinking governments. The City of New York, under the dynamic leadership of John Lindsay, is moving toward a near real-time information system which will tie all of the city's departments and agencies into an integrated computer-based system. This system will provide data in useable form for the policy-makers as well as for those at the operating level.

New York State is currently developing a computer-based Identification and Intelligence System for law enforcement, the first of its kind in the world. The system will provide unified information to all state and local agencies which deal with the administration of criminal justice. The agencies will have access only to that portion of the information which falls within their respective legal, right-to-know restrictions. The scope of the system is broad:

"In support of the normal daily operation of (state and local) participating agencies, the fully implemented system will provide rapid access to summary criminal history, as well as detailed criminal, social, and modus operandi data on each subject; will rapidly transmit graphic data, such as photographs and fingerprints, fraudulent checks, warrant-and-wanted notices, stolen motor vehicles, stolen property, laundry marks, stocks and auto registration forgeries; and will provide direct scanning and computer-based searching of all fingerprints on file, the arrest and disposition reports, and intelligence information."

Even in the international field the systems approach is finding adherents. The Greek Government announced last March that it is negotiating a multimillion dollar contract with a large diversified American industrial concern for regional economic development on the island of Crete and western Peloponnesus. The U.S. firm, applying the system approach and developing proposals for review and approval by the Greek Government, will provide the management capability. In ten years it is hoped that both regions will be industrialized and transformed into tourist attractions.

These illustrations only scratch the surface of the many large system projects we can anticipate. We can reasonably predict that many other public problems, as yet unheard of, will demand solution. As Mr. Karl G. Harr, Jr., President of the Aerospace Industries Association, has stated, "only if this situation is fully grasped, only if the experience in coping with such problems which are already at hand is analyzed and applied, and only if the total potential for addressing these problems is positively exploited, will future managers both in government and out have the tools with which to marry technological advances with a society of free men and free institutions."

We need to focus attention on these challenging ideas at the highest levels of government. The examples cited indicate that the systems approach can be used. However, we need to take a longer, more comprehensive, look at the total opportunity for applying the resources we have available to us. The proposed Commission can provide this necessary perspective.

THE JOB OF THE COMMISSION

What specific types of questions could such a Commission be expected to study and investigate?

One question would involve the definition and categorization of those social and economic problems in the non-defense sector to which the application of the systems approach appears to hold promise. Some of these are obvious, particularly at the national level, but others such as local community problems are more obscure and require thoughtful analysis.

The California studies provide a representative listing of the most crucial of the current problems facing a large state. But other states and local communities will have different needs which can also be

-7-

approached from a total systems standpoint. At the national level, the problems of relating sometimes conflicting state and local problems into an integrated regional or national system require a thorough analysis.

The distinctions between the use of systems techniques for planning, organizing, and controlling public programs also deserve considerable attention by the Commission. Planning procedures and tools such as the Planning, Programming and Budgeting System (PPBS), cost-benefit analysis, mathematical modeling and simulation, operations analysis, and others need to be studied in the context of the real life environment of Federal, State and local government planning operations to determine how they can best be utilized.

The Planning, Programming and Budgeting System (PPBS) is an adaptation of a management tool originally used by the Department of Defense to develop a clearer relationship between the planning operations of the various defense sectors and the annual budgeting operations of the Department. PPBS is currently being installed throughout the Executive branch of the Federal government and is also being studied by several State and city governments. It seems certain that the general principles of PPBS will be applicable and perhaps mandatory for most future public programs.

Cost-benefit analysis, or cost-effectiveness evaluation, is another management planning tool developed by the Department of Defense. It provides a framework of analysis enabling us to select between competing programs based on the benefits versus the cost of several alternative approaches. In the defense area, benefits or effectiveness can be defined in terms of kill probability or payload or other such quantitative measures. In the non-defense sector, the definition of effectiveness becomes extremely complicated by human factors and political consideration.

The use of mathematical modeling and simulation is widely used in management training programs to illustrate the effects of specific decisions in particular business situations. Many other variations of modeling are in use, all with the objective of eliminating the need for costly trial and error in the real world. But they all have certain limitations which need to be analyzed in conjunction with their proposed application.

These planning tools can be effective in streamlining the decision-making processes involved in any type of public program. The decisions, of course, remain the responsibility of the authorized officials, but the facts required to arrive at these decisions can be made more readily available and useful.

Other types of management techniques developed recently are concerned with the control of complex programs during their implementation. These management tools are identified by such acronyms as PERT, PERT/Cost, PAR, and many others. Basically they can be described as near real-time computer-based information systems, such as those being developed in New York State, which provide the feedback information on program activities that is necessary to quickly isolate problem areas for prompt management action. These techniques have been proven in some of our largest weapon system developments, such as the Polaris and Minuteman ballistic missile systems. They now need to be studied as they relate to public programs in the non-defense area, where success involves a large human and social element rather than the hardware-oriented output of the defense and space fields.

THE ROLE OF GOVERNMENT

Overriding all of this is the question of an optimum organization -- both at the public and private level -- to accomplish effective system planning and implementation. This question of organization leads logically to a Commission review of the appropriate relationships between and among several overlapping systems and the demands thus placed on inter-governmental coordination at the Federal, State, and local levels.

Should there be a program manager responsible for all activities in a given problem area and organizationally located in one level of the several State and local jurisdictions which may be involved? Or should the responsibilities be divided among several jurisdictional authorities? In either case, should an industrial prime systems contractor be hired on a turn-key basis? Or should the systems management responsibility reside within the government, with major pieces of the job given to several associate contractors? These and many other questions need studying to determine the best of the multitude of systems management techniques for use in any given situation.

The geographic boundaries and historic charters that once created obvious administrative divisions are no longer of central importance. For example, the problem of pollution in the Merrimac River is one involving at least two states and several local communities. They must find new means for working together to solve this problem, irrespective of jurisdictional lines.

Functional interests have already been the foundation for hundreds of new governmental units: agencies and boards to run airports and ports, to administer reservoirs, to build highways and to educate children. The resident of Boston is governed not only by the city government, but by the Massachusetts Port Authority, the Metropolitan District Commission, the Massachusetts Bay Transportation Authority and a plethora of other boards and commissions. An awareness of these revolutions in jurisdictional authority must be included in any thorough analysis of government's partnership in public programs.

We are all aware of the problems which can arise when two programs or two levels of government, in pursuit of separate but somewhat overlapping objectives, proceed with tunnel vision toward their respective goals. This situation arises on the national level as well as on the local level. The need for inter-system management to coordinate such efforts is apparent, but the optimum methods for accomplishing it need to be determined.

One source which can be tapped to assist in this endeavor is the wealth of experience in the systems approach residing within those Federal research and development agencies involved in the nation's defense and space effort. There is a need to determine how the other Federal administrative agencies and State and local governments can best expose their own personnel to this experience by cross-training programs with the Department of Defense and the National Aeronautics and Space Administration. There are attempts now being made to accomplish some of this inter-agency transfer of systems experience. For example, the Institute for Defense Analysis and the Department of Defense have developed the Defense Systems Analysis Education Program. Officer and civilian personnel from the Department of Defense, the Department of State and the CIA are receiving training by IDA and University of Maryland personnel in an effort to fill the need for decision-makers skilled in systems management techniques. The stimulus of a national commission investigating the opportunities and procedures for transfer would be most welcome in encouraging and advancing this trend for non-defense agencies.

GOVERNMENT-INDUSTRY RELATIONSHIPS

Another area for Commission study would most certainly involve an appraisal of the proper relationships between the various levels of government and the private sector. The question of the proper balance between public and private investment must receive careful analysis. The level of governmental activity will vary with each class of problems and it is doubtful that the approach that satisfies one class will be useful in another. The Commission would be expected to recommend the best means for stimulating private investment wherever possible. Conversely, where direct Government investment is necessary, the Commission would provide suggested guidelines for the proper balance between Federal and local funds.

As we proceed past the initial phases in the application of the systems approach to public problems, it will become more important to use the best possible techniques for supporting private industry. The possibilities include several types of modern contracting methods, such as incentives and award fees; and various other financial transactions to stimulate private effort, such as loans, tax incentives and cost allowances. Also needed is an analysis of which level of government is best qualified to handle the end funding and with what control from other authorities. It is likely that different procedures will be suited to different situations. It is quite possible that the Commission's efforts can lead to better methods than have yet been devised for solving the procurement problem.

INDUSTRIAL SYSTEMS CAPABILITY

Along with study of the applicability of the systems approach and the government relationship to systems management, the Commission can investigate the requirements which will be placed on private industry -- both in aerospace and non-aerospace companies. It is highly probable that even those aerospace companies with the most experience with the systems approach will find that the application of this approach to new kinds of public problems is different from their past experience. The California studies have shown that the systems approach is feasible, but that its application requires a certain amount of experimentation to determine the best way to proceed. In other words, the systems approach cannot be transferred directly from the aerospace environment to socio-economic concerns without some modification and a learning process by all those involved.

In fact, the review of these studies by the California Department of Finance points out many problems which require further study. Systems analysts from the aerospace industry are used to working for large, rich, monolithic organizations. State or local agencies, and even the Federal agencies concerned with socio-economic problems, must operate with limited budgets which cannot readily be expanded beyond estimates. Changes in legal authority and in budgets and procurement regulations may be required.

In the aerospace context, the value of a system is usually well defined in terms of capability versus dollars. But in government these values may be less clear. The value of murder prevention or a 50% reduction in air pollution is difficult to define quantitatively.

The California evaluations also noted weaknesses in certain broad areas common to each study. There was a feeling that the conclusions were perhaps too positive for the brief nature of the studies and the size of the problems. There was a feeling that some of the ideas presented were imaginative and appealing and very probably workable, but

not totally and adequately proven. In some cases, the cost factors for implementing the presented recommendations were considered inadequate. There was concern that many of the legal and political problems in implementing the recommendations had been slighted. It was found that the establishment of criteria for the evaluation of any activity was extremely difficult and frequently highly arbitrary. Similarly, the analysis of methods of evaluation against these criteria was often inadequate. A potentially serious problem is that of communication between the systems oriented scientists and the specialists in the substantive areas. It was found that scientists and engineers whose background is in military culture and hard sciences often find it difficult to communicate with those steeped in social, economic, political and behavioral sciences.

These points are mentioned not to degrade in any way the notable success of the California studies and the excellent jobs done by the aerospace companies involved. They do emphasize, however, the need to iron out some of the natural problems of transition from one frame of reference to another.

ROLE OF SMALL BUSINESS

An important area for investigation is the role of small business in the solution of public problems. It is clear that the industrial teams required for implementation of these "socio-economic systems" will not be made up entirely from big industry. The unique talents of small business will be required as much here as they have been in the development and deployment of weapon and space systems. Yet to be determined, however, are the specific contributions which small business can make, and even more importantly, how they can best be brought into the scheme of things.

An excellent example of one of the approaches which has already been taken in this area is a recent executive seminar entitled "The Management of Growth and Technological Change", conducted by Northeastern University and Harbridge House and sponsored jointly by the Small Business Administration, the Department of Defense, and the U.S. Arms Control and Disarmament Agency. This seminar provided a forum for thirty corporate executives, representing small technically-based firms in the Boston area, to explore, by means of case studies, the experiences of firms which had responded successfully to drastic changes in their product markets. The seminar also highlighted the management techniques involved in analyzing corporate capabilities, market prospects, and the development and execution of a strategic plan for growth. Even more importantly, it served to stimulate the collection and analysis of data by the participating firms and the development of a plan for individual company growth. The program was so successful that Northeastern University is now undertaking additional case studies for use in future seminars.

The Commission could undertake an expansion of this seminar concept in cooperation with universities throughout the country. Its findings can provide an important service to the small business segment of our economy as it strives to keep pace with rapidly moving technology.

In addition, these findings can be expected to speed the adoption of modern systems analysis and management techniques by smaller companies in non-aerospace industries, so that they too will be capable of attacking public problems using the systems approach. We would expect the final Commission report to be a highly educational monograph which can be used by these companies and, in the field.

LABOR PARTICIPATION

We consider it most important that organized labor play a significant role in the activities of the Commission. There will be many questions to answer concerning the requirement for retraining and relocation of the labor force in response to the application of new technology and modern management in public programs. Other groups, such as the National Commission on Technology, Automation, and Economic Progress, have studied this area, but more effort is required. We must insure that the high productivity and capability of this nation's labor force is utilized as efficiently as possible in any of our planning for the future. For in the end, no matter how good our scientific and management tools may be, it is the worker who digs the holes, lays the bricks, and connects the wires which give any project its final form.

USING UNIVERSITY RESOURCES

The university community can also participate in and contribute to this endeavor in several important ways. A number of colleges and universities are already offering courses and degree programs in operations research, and business and engineering administration programs reflect the emphasis on new management techniques. The number of data processing complexes in the universities has nearly doubled in the past three years. In fact, the requests of the 36 colleges and universities seeking assistance under the National Science Foundation Computing Facilities Program totalled \$14,664,316 for fiscal year 1966. The effectiveness of these programs should certainly be a subject for careful study by the Commission.

In addition, there is an obligation to utilize the intellectual resources of the university in both an objective determination of the problems suitable for investigation and in the applicability of the various management techniques to these problems. This will provide the universities with an important opportunity to gain intimate knowledge of the real problems confronting the managers of public programs. This knowledge will enable the universities to prepare future generations of managers through revision of current curricula and addition of new courses. One educator has called for the development of "highly qualified 'generalists' -- men able to correlate knowledge in different fields in a meaningful and predictable way....Furthermore...there is a logical argument that engineering is now taught backwards," producing specialists in various technical disciplines instead of graduates with "broad systems understanding" which puts business, engineering, economic, social, and other problems in perspective.

To counteract this tendency, the Commission could study the feasibility of government cooperation in establishing or encouraging the formation of inter-disciplinary groups within the university which would combine the study of all aspects of current and future public sector problems.

COMMISSION OPERATION

With these and many more questions and issues to study and investigate, the Commission should have a busy and fruitful existence. The Commission would conduct a full schedule of hearings, receiving testimony from the recognized experts in the systems field representing all segments of our society. It could draw on the advice of consultants as required, and could contract directly with private organizations to conduct more detailed studies of certain specific subjects, if this were deemed necessary. In addition, it would be appropriate for the Commission

-12-

to sponsor one or more seminars in order to stimulate informal discussion and help to generate additional support from both public and private leaders. The seminars could be held on a geographic or functional basis.

At the end of the first year, or definition phase, the Commission will have completed its preliminary analysis of the subject and prepared an interim report for submission to the President and Congress. This report will include a precise description of the problems to which the Commission is addressing itself, a preliminary analysis of the applicability of various systems analysis and management techniques to these problems, and a detailed plan for a continuing study leading up to the final report to be submitted 18 months later.

This final report will contain explicit plans, including completed case examples, for applying particular systems analysis and management procedures to specific public problems. These plans would contain estimates of cost, staffing requirements, schedule, skills required, and other hard data for each application, so that any government agency at the Federal, State or local level would have ready access to useable guidelines. In addition, the Commission's final report would be expected to contain recommendations for legislation, Federal executive action, and state and local governmental action in order to better facilitate the application of modern technology and systems analysis to the solution of current and future public problems.

We have attempted to describe some of the benefits and accomplishments which can be foreseen from the initiation of an effort at the national level to analyze in depth the application of these systems techniques to our many national and community problems. We are sure that none of us can forecast the full measure of worth to this nation which such an endeavor may ultimately provide. We are equally certain that the use of modern technology coupled with the application of modern management techniques may provide solutions to many of the problems which now appear insoluble. It is up to us in the Congress to ensure that these steps are taken in a timely fashion.