Program of Policy Studies in Science and Technology

Seven-Year Review • 1966-1973


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Statement of the Director

The Program of Policy Studies in Science and Technology was established in 1966 with the assistance of a generous institutional grant from the National Aeronautics and Space Administration for the specified purpose of developing a "University policy analysis capability." In the 1968-69 Report the Director of the Program described the interim activities and presented a tentative assessment of the performance of the Program for the first three years. This Statement reviews briefly the activities and operations of the Program with respect to its stated objectives for the seven-year period ending August 31, 1973.

A basic operational assumption of the Program has been that complex social problems usually cannot be properly managed by partial or specialized treatment or by "one-factor fixes." Such problems need to be considered within a context sufficiently comprehensive to identify significant relationships among variables, yet limited enough for adequate analysis. Hence, a major focus of the program was to be on the application of an interdisciplinary, problem-oriented capability to the performance of total social impact evaluations of the consequences of introducing new configurations, technological or otherwise, into future social environments. In turn, it was anticipated that the knowledge and analytical proficiency gained from studies, seminars, proceedings and publications would be converted into instructional materials, teaching techniques, and new curricular designs which could contribute to the strengthening of the University's academic programs.

The primary characteristics of the Program can thus be summarized as follows:

- **Emphasis on interdisciplinary, problem-oriented analysis.**
- **Development of intra- and inter-institutional arrangements for the purpose of analyzing social problems, evaluating existing programs, and assessing the social impacts of prospective policies, programs, and other public actions.**
- **Focus on methodological approaches to the projection of alternative future social environments, the identification of the effects of the introduction of new policies, programs, or other actions into the social system, and the evaluation of the social impacts of such effects.**
- **Availability of analytical resources for advisory and research tasks, and provision for use of Program facilities as a neutral forum for the discussion of public issues involving the impact of advancing technology on social value-institutional processes.**

A crucial element in the concept of the Program of Policy Studies was and is that its research and analytical efforts be directed to the actual on-going public policy process with special reference to the impact of advancing technology on participants, values, and institutions. The staff, of course, recognizes the need to develop conceptual schemes to serve as the organizing rationales for policy analysis tasks. But the essential mission of
the Program has been to address existing or emerging social problem contexts (whether at the Federal, state, regional, or local levels and whether relating to a particular phase or phases or to all phases of the Policy Formulation/Program Implementation process). In sum, it was not the original objective of the Program, nor has it been our practice, to assume intellectual/analytical tasks which have customarily been carried on by the established departments and professional schools of the University. It has rather been to devise means of assembling the skills representing all relevant disciplines and professions and integrating such skills into an articulated effort for a complete analysis of a particular problem (posited or presented).

Program Activities 1966-1973

The effort of the staff of the Program (PPS) to implement the objectives-characteristics of the Program is reflected in the following recital of activities:

- A problem-oriented, policy analysis capability has been developed and the Program’s professional staff has accrued considerable experience in social impact assessments as represented by numerous study reports, seminar proceedings, and professional papers.

- The PPS has maintained a basic core staff of 10-15 professionals which has at times reached a level of 35-40 professionals, including the participation of over 75 GWU faculty members.

- The PPS has usefully applied the talents of over 200 graduate and undergraduate students in the University.

- The PPS has presented over 85 professional seminars, including 16 separate series and 5 special seminars. Participation in these seminars has involved a wide range of representatives of the governmental, industrial, university and R&D communities.

- The PPS has published over 100 monographs, study reports, and books which have been widely distributed by the PPS and through the National Technical Information Service to interested scholars, policy analysis groups, Federal, state and local governmental entities, and governmental offices and private policy analysis organizations throughout the world.

- Members of the PPS staff have been invited as principal speakers for numerous Congressional hearings, professional association meetings, and various international conferences on topics involving science, technology, and public policy.

- The PPS provided a substantial part of the initial funding and has co-sponsored with the School of Public and International Affairs the Master’s Degree Program in Science, Technology, and Public Policy. Over 60 students have participated in this academic, research and colloquia program in the past three years.

- The publications of the PPS have been used by numerous universities in their courses in the area of science and public policy and the Program regularly receives requests for assistance in the development of new courses or for the arrangement of meetings or for advice on policy analysis studies from individuals and groups in the U.S. and various foreign countries.

- The PPS has received in excess of 60 specific grants and contracts over the past 7 years.

Program Operations

An interdisciplinary, problem-oriented approach to the analysis of public programs, projects, or other actions need not be considered to exist or not exist. There are various degrees of interaction which might be associated with given analytical efforts as well as varying combinations of skills and experience which might be utilized in a given effort. Policy analyses, including anticipatory project assessments, are not ordinarily performed or not performed; they are performed with varying degrees of adequacy or inadequacy. Within any given policy analysis group, some efforts will invariably be performed with a higher degree of proficiency than others for a variety of reasons, i.e., internal or external conditions and constraints.

Our experience over the past seven years has demonstrated that an interdisciplinary, problem-oriented approach to policy analysis may assume innumerable dimensions and forms. While a viable policy analysis program should have a basic core professional group of 12 to 15 for purposes of consulting on new proposals and reviewing projects in progress, it does appear that a readily available professional staff of approximately 20 would be optimum for a university-based policy analysis group such as we have attempted to develop. An extremely cooperative attitude by many members of the University faculty, who are not regularly associated with the Program, has served to provide a reservoir of professional knowledge and advice upon which the staff
has frequently drawn to extend its analytical resources.

One obvious outcome of our experience has been recognition of the need to tailor carefully the interdisciplinary group effort to the specific project. Those skills relevant to the project objective must be assembled. Our various projects have required a wide range of professional skill combinations. Certain projects have been broadly conceived and have required a full spectrum of skills, as, for example, the study on the Social Impacts of Future Civil Aviation Systems, an effort involving over 30 professionals and graduate students from a wide variety of disciplines and professions. The study staff on Laws and Regulatory Schemes for Environmental Noise Regulation was constituted primarily of lawyers, law students, and political scientists. But a follow-on study on Aircraft/Airport Noise Abatement Alternatives required a much broader professional representation including lawyers, land use managers, regional developers, community relations specialists, economists, aeronautical engineers, and those experienced in aircraft/airport operations. In brief, every policy analysis effort does not require the full staff of professionals who might be associated with a policy analysis group.

One of the disappointments of our experience has been the lack of success in gaining funding for several ambitious proposals which involved broad participation by faculty members in the University and, in certain instances, intensive efforts by professionals from other policy research organizations. In this sense, much of our interdisciplinary effort has come to naught. But even this experience has produced some benefits in gaining cooperative action and new insights from representatives of the various disciplines.

The program staff has found most of its work to be intellectually demanding, some exceedingly so. While good quality work usually requires time for in-depth research, analysis and reflection, we have also found that in most instances of "quick response" tasks, we have been able to perform a satisfactory analysis. Clearly, however, there is a limit to what can be done adequately under severe time constraints.

**Changing Conditions Affecting Program Activities**

The original concept of the Program envisaged the assembly of a broad range of disciplines and professions to address problems relating to the impact of advancing technology on social processes. But as noted above, the operational context of social problem analysis requires a particular mix of skills for each specific project. This factor poses difficulties for keeping all members of a broad interdisciplinary staff continuously and usefully engaged. A resulting tendency is for those temporarily unoccupied with a program project to pursue special interests of their own. This potential distraction from a total problem analysis orientation toward particular areas of social problem interest, and specialized treatment of even these particular areas, becomes difficult to counteract unless there is either a continuing flow of problems to the organization which require the participation of the full staff or provision for continuity of funding for the staff to posit its own inquiries is otherwise provided. Indeed, full or essentially full dependence on grant and contract funding for new projects almost inevitably results in the development of specialized interests by staff members in order to take advantage of opportunities to match interests with available funding. Hence, organizational sub-groups having specialized analytical capabilities evolve. This centrifugal force can present a difficult problem of containment if the basic structure of a total social impact analytical capability is to be maintained.

As a result of constantly increasing and now substantially full reliance on grant and contract funds for operational support, the Program has found it necessary to accommodate to this integration v. fragmentation tension.

The structure of the Program has changed in recent years to take advantage of new research and analysis opportunities. The consequence has been the establishment of a variety of identifiable sub-groups within the Program, as for example:

- **The Technology Assessment Group**, devoted primarily to studies in the area of science, technology, and public policy (Coates)
- **The Educational Policy Group**, devoted to both domestic and foreign country educational policy issues (Margolin)
- **The National Advisory Council on Supplementary Centers and Services**, devoted to reviewing and evaluating Title III of the Elementary and Secondary Education Act of 1965 and reporting its findings to the President and the Congress (Kluempke)
- **The Innovation, Information and Analysis Project** supported by NSF, devoted to developing a comprehensive body of literature on technological innovation and pro-
viding related analytical support services (Tennant)
- The Master's Degree Program in Science, Technology, and Public Policy having academic association with the School of Public and International Affairs and research and colloquia association with the PPS (Logsdon)

The fragmentation of an interdisciplinary program staff into specialized sub-groups has not meant that continuing interaction of the full Program staff is no longer feasible. A useful level of control can still be maintained in terms of ability to assemble a relevant group of skills for purposes of proposal preparation or of project performance. It might be emphasized that the level of capability of a policy analysis group should be judged not only by an ability to perform certain types of policy analysis adequately but by the capability to assemble relevant skills for special projects or other purposes. The Program of Policy Studies has relied almost entirely on unsolicited proposals rather than upon responses to Requests for Proposals.

It is evident from previous comments that the Program has necessarily made an organizational response to external conditions including shifting subject matter interest of Federal agencies and sources and types of funding available to university-based policy analysis groups. Our Program organization has changed through time from a staff supported almost entirely from an institutional grant to a staff of sub-groups organized to deal with particular patterns of policy analysis tasks. Under this arrangement it is now incumbent upon each “group” to select its areas of prime interest, to prepare proposals and pursue funding efforts to support its activities, to assume responsibility for administrative tasks associated with its efforts, to arrive for necessary staff appointments, and to perform adequately the projects undertaken.

As noted, there are certain difficulties in this arrangement for the maintenance of intensive interaction within an interdisciplinary professional staff which is essential as a resource base for problem-oriented research. But there are also advantages in this arrangement. First, since the various “groups” share the same physical space, consultation and discussion are facilitated and various combinations of professionals can be assembled to consider new proposals or other policy analysis actions with trifling inconvenience. Second, the decentralization of effort with the sub-group structure assists with the determination of analysis missions, distributes, yet locates, responsibility for particular actions, encourages initiative by a larger segment of the Program staff, and tends to generate quality control mechanisms within each “group.”

One of the major difficulties confronting a program which must rely heavily upon grant and contract support is the limited ability to plan ahead. This in turn means that the involvement of desired faculty members is sometimes difficult to arrange since departmental or school commitments have frequently been made prior to the date a project becomes effective. Most faculty members of The George Washington University have been quite cooperative in assisting the Program staff in proposal preparation and project performance when their availability has permitted. An increasing number of faculty members tend to be interested in problem-oriented and action research. While the interdisciplinary approach remains to some extent at odds with the traditional university organizational structure, it is clearly consistent with a social problem focus. If a core group of capable and interested professionals can gain a limited degree of momentum, then the policy analysis function has a good chance of maintaining an effective level of effort even when adjusting to the constraints necessarily imposed by the university administrative/operational structure.

The Evolving Policy Analysis Function

Assembling professional skills to perform social problem analysis for purposes of introducing the resulting outcomes into the public policy process is a very different task from that of the conventional academic function of producing and disseminating knowledge. Policy analysis involves the production of outcomes which are designed to clarify policy options and intended to have some impact upon socio-political decision making. One implication of this observation is that those involved in the policy analysis function should properly be judged by a somewhat different set of professional performance criteria than those customarily applied to the university faculty member. A combination of organizational skills and intellectual talents which differs appreciably from the normal demands made of either university faculty members or administrators is required of policy analysis principals. Hence, the question persists as to whether universities are appropriate loci for such efforts, or if some universities may be but most are not, or what other types of existing non-university or new institutional arrangements can better serve the objective of converting available knowledge and analytical resources into useful inputs to the public decision process. Assuming the availability
of the basic resources for a policy analysis effort, it is likely that each particular institution, university or other, will necessarily need to tailor its effort to the special conditions (opportunities and constraints) of its socio/institutional context.

It is certainly not our contention that all policy analysis should have a university base nor that every university should have a social problem-oriented research group. It is a matter of the perceived mission and resource availability of the particular university. We have found the Program's work both to be intellectually challenging and to require the development of organizational/analytical skills which are not often taught or utilized in the normal educational process. The critical difference is that the policy analysis function is ordinarily related to existing or projected social problem contexts requiring the assessment of alternative project configurations for the solution or alleviation of an unsatisfactory social condition. This task is a stimulating experience; it is also hard work. It should be recognized that there is a good deal of "cost" (professional effort as well as financial) attached to the operations of a policy analysis program. Such costs must be weighed against the prospective benefits to students, faculty, professional groups, and public service needs in evaluating the net benefit of such an activity to the particular university.

At The George Washington University we perceive a definite, if gradual, recognition of the need for activities in some manner related to the policy analysis function. New stimulus has been given to interdepartmental and interdisciplinary efforts through the Division of Experimental Programs. The various continuing professional activities in the educational and health policy fields carried on by the Institute for Educational Leadership seem a reliable index of the need for more systematic attention to the public policy process by universities in position to perform such functions. The location of the new American Bar Association Center for Administrative Justice at the University is still another component of a growing institutional development at The George Washington University which, along with the Program of Policy Studies and the Master's Degree Program in Science, Technology and Public Policy, could evolve into a substantial University effort in research and continuing professional education having a direct relationship to the public policy process.

It is perhaps apposite also to comment that the establishment and maintenance of a policy analysis capability concerns and depends upon an effective interaction among all the participants and entities involved in the public decision process. However much the Congress or the Federal departments and agencies might need analytical support with such tasks as the preparation of NEPA §102(2) (C) statements or with special proposed projects, if the responsible officials in such agencies do not perceive the need or do not have the resources to engage the services of policy analysis groups, then the latter surely cannot develop a continuously improving analytical capability. The universities can be expected to develop useful policy analysis capabilities, only to the extent that they are encouraged to do so. On the other hand, the sponsoring-consumer has both the right and duty to demand adequate performance.

Many indices point to a definite trend in interest and activity which may reasonably be categorized as "policy analysis." Academic interest is manifested in the rapid growth of professional periodicals and association meetings devoted to the general area of social problem-oriented analysis over the past few years. Much recent Federal and State legislation gives heavy emphasis to a wide range of environmental factors which pertain to "human" as well as to "natural" environmental quality. This means that the public sector agencies now have statutory mandates to consider new proposals for programs, projects, and actions in far broader terms than heretofore required. Further, many Federal departments and agencies now have offices of policy or of planning which provide added stimulation to the policy analysis function. And the Office of Technology Assessment, now established as a future-oriented analytical arm of the Congress, should provide a major focus for a growing policy analysis interest.

Future Directions

It is anticipated that the continued focus of the Program's activities will be directed to analytical tasks involving the impact of advancing technology on societal institutional-processes. Attention will continue to be given to the basic Program objective of assembling interdisciplinary groups to perform future-oriented studies of the social impact of proposed programs, projects, and other public actions.

The Program staff has developed a number of different methodological approaches to the projection of alternative future social environments, the identification of the effects of new technological interventions into future social environments, and the evaluation of the social impacts of such effects. The competence of the staff in the application of these method-
ologies has reached a relatively high level and it is expected to continuously improve. Further, the experience gained by the professional staff in the numerous studies performed has equipped us to deal with a wide variety of topical areas, including: environmental impacts of major social-functional systems such as transportation, housing, solid waste management, etc.; legal/policy/economic conditions affecting the R&D and technological innovation processes; application of communications media to community services in both industrialized and developing nations; urban/regional land use planning including the application of Earth Resources Satellite data for such purposes; development and appraisal of regulatory schemes and mechanisms for the control of environmental noise; educational technology policy; Federal/State/Local governmental interactions in the regulation of new technological interventions; citizen participation in the evaluation of proposed technological projects, and so forth. The Program staff intends to continue its strong involvement in the technology assessment function.

It is also the intent of the Program staff to continue its seminar series on matters relating to technology assessment and other methodologies and activities involving the interaction of advancing technology and social process. Our publications series will also be continued but probably on a more limited level. We do plan to hold a continuing series of seminars on the evolving functions of the Office of Technology Assessment and to publish a series of papers on this activity.

The Program's activities over the past seven years have clearly served to identify and maintain a loose community of professionals in both public and private sector organizations who share common interests in the impact of science and technology on public policy. The Program's activities have supported new academic innovations in the University and have provided an opportunity for numerous faculty members and students to engage in analytical activities which have contributed to their professional interests and competence.

As noted, the continuing activities of the Program will depend largely upon the opportunities offered by sponsoring agencies for funded research, seminars, conferences and other events. In this regard, we continue to be optimistic. One further comment seems quite appropriate in this brief report, namely, the critical importance of the NASA "institutional support" funding which enabled the Program to generate the momentum for a sustained effort. Having observed the rise and frequent demise of many other university-based, problem-oriented groups over the past several years, it is difficult to see how such programs could reasonably have been expected to become viable, on-going operations without substantial initial funding—in addition to other requisite conditions such as an interested professional capability and a favorable university environment. The NASA grant not only provided this Program with the ability to establish a fairly broad interdisciplinary policy analysis capability but supported our publication series and professional seminars which have been effective means for establishing Program visibility and recognition. For this funding support and the continuing interest of both past and present members of the NASA staff we are indeed grateful.
Advisory Committee

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President, The George Washington University

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Albert Schweitzer Professor in the Humanities,
Syracuse University

Reuben E. Wood
Professor of Chemistry,
The George Washington University
Background and Organization

Policy analysis is one essential means of coping with the needs of a complex, dynamic, and demanding society. Policy analysis is indispensable both for the effective treatment of existing social problem areas and the performance of future-oriented studies of alternative means of achieving select or provisional social goals. Complex social problems cannot be properly managed by partial, specialized, or arbitrary means. One-factor fixes seldom work. Social problems must be considered within a context sufficiently comprehensive to identify significant relationships, yet limited enough for adequate analysis. Analyses in turn, to be useful to policy makers and affected public participants, must include precise, realistic presentations of options, strategies for implementation, and probable outcomes in terms of effects on participants, social values, and institutions.

Policy Analysis at the George Washington University

It is from this perspective that the Program of Policy Studies in Science and Technology has developed a special capability for policy analysis. The focus of the Program on science and technology has resulted in the creation of various methodologies for conducting total social impact evaluations of technological applications. These concepts and skills are generally applicable to the policy formulation and program evaluation phases of the ongoing public decision process. The knowledge and analytical proficiency gained from research projects are converted into teaching materials and new curricular designs which contribute to the strengthening of the University's academic programs. These mutually supporting functions are achieved through studies, seminars, and publications distributed as a public service.

Program Resources

Essential resources for effective policy analysis include location, institutional setting, facilities, and professional skills. The location of The George Washington University places it in easily accessible reach of the Congress and most Executive Departments and Agencies of the Federal Establishment. The Program of Policy Studies is a University-level entity responsible directly to the President of the University. The Program has close working relationships with all major Professional Schools and other components of the University including the library and data processing services. The Program draws upon a broad range of professions and disciplines:

- Public Administration
- Public Law
- Political Science
- International Affairs
- Sociology
- Economics
- Educational Psychology
- Business Administration
- Urban & Regional Development
- Land Use Management
- Operations Research
- Cybernetic Systems
- Medical & Biological Sciences
- Engineering and Applied Science

Organization

As the Program evolved in recent years, the structure has changed to take advantage of new research and analysis opportunities. Thus the following sub-groups within the Program have been established:
EDUCATIONAL POLICY GROUP

In 1966, a special group within the Program was established for the study and development of programs in formal and non-formal education. This center, the Educational Policy Group, is engaged in a multiple approach to education in the United States and in the technologically developing nations of the world, including:

a) the process of policy development in education;

b) the assessment of the effects of new educational technologies and their potential for society and the individual;

c) the development of new strategies for the application of communication technology to education in many nations;

d) educational program development;

e) the study of improved methods of educational innovation, as well as techniques for dissemination and utilization of educational methods and materials;

f) study of the effects of learning settings, materials and their interaction on the process of education;

g) the development of method and practice for facilitating the cooperation of educational problem solvers from various disciplines and cultures in cooperative endeavors.

The foci of educational activities are diverse. They include approaches both within and out of schools; the particularized demands of rural, as well as urban education; the special areas of basic education, preschool programs and learning by the physically, emotionally or mentally handicapped; adult and adolescent vocational training.

From its inception, the Educational Policy Group has been intensively involved in the applications of the communication technologies not only to formal education, but also to education in related fields (e.g. nutrition, family planning, public health), and in devising strategies for the organizations and systems involved in their delivery. Studies include applications of various communication media from computers to satellites, CATV to the tape recorder, as well as filmstrips and picture-dominated printed materials.

Critical communication technology issues that have been confronted include: which media to select for what purpose; which media for what audience; how broadcast media can be utilized while tailoring programs to local and individual learning needs; how to develop modules to allow for optimal program mix; how to develop modules for broad use while allowing cultural adaptations; how to shift content over time to keep abreast of changing conditions and audiences. Legal, sociological, economic and behavioral-motivational issues are confronted, as well as those directly associated with the educational process.

The EPG is a multidisciplinary organization with capabilities in education, economics, political science, international affairs, management, several areas of engineering, linguistics and system design. Its R&D activity has been directed by a combination of defining sound objectives and creative conceptualization. This approach tailors research and program design to the real needs of the problem and its solution, rather than being geared to disciplinary principles or boundaries. The several disciplinary areas are integrated in the pursuit of sound and holistic solutions and alternatives.

Over the years, members of various disciplines have learned to cooperate in the application of effective methods for solving problems. Instead of remaining specialists in a conventional discipline, staff members have become expert in need assessment, the diffusion of innovation, facilitation of utilization, and evaluation and policy development. These have been applied to the development of communication systems, to many areas of education including basic and informal education, to family planning, to new town and urban program development, etc. The EPG approach has been innovative and is generally based on the development of new methodology as well as on advanced system design. Through this system design, a wedding is being undertaken of the capabilities of the communication media (hardware and software) with the now broadening field of educational research. Fundamental to this marriage is a more complete understanding of applications of the behavioral and social sciences to individual and social development and the many aspects of learning.

During the past five years, the following major projects have been completed:

- "Education in the '70's—a study in educational technology"

- "The Dissemination of Audio-visual Materials in American Education."

- "Strategies for the Use of Mass Communications Media in the Technologically Developing Nations."

Strategies were developed for utilizing communications media to bring family planning, basic education, and nutrition education programs to the rural and urban poor. General principles and programs were developed in
the fields of family planning, nutrition, and basic education and were then applied more specifically to Colombia, the Republic of Zaire, and Indonesia. The product includes consultation strategies designed for the process of cooperative work between nations, as well as programs, training and evaluation strategies.

- "Social and Behavioral Science Development in Higher Education" (Consultation to the American Institute for Research and to the Universidad Nacional Pedro Enrique, Dominican Republic).
- "Civil Aviation 1970-1985: Behavioral and Sociological Factors"
- "CATV—Systems and Audiences"
- A Market Analysis of American Education.
- "Survey and Evaluation of the Usefulness of Picture Booklets for Family Planning Education Among the Poor in Rural and Urban Colombia."
- "Implementation Plan for a Colombian Rural Family Planning Training Center and Field Network: Information, Motivation, Communication and Distribution."
- "A Plan for Extending Family Planning Capabilities in El Salvador through the Application of Strategies for Utilizing Communications Media to Improve the Training of Personnel."
- "The Decentralized and Continuous On-the-job Training of Field Workers in Indonesia—a Near-Peer Teaching and Small Communications Technology Approach."
- "Primary Prevention in Health Care Assisted by Communications Media: A Program for the El Salvador Social Security Institute."
- "Improving Family Planning Communications through Strategies for Using Educational Technology"—a plan for the University of Costa Rica Latin American Training Program.
- "Computers in the Classroom" was published in September 1970.
- A second volume, devoted to educational technology systems and the dissemination and utilization of educational technology materials is in preparation under the auspices of the Ford Foundation.

Joseph B. Margolin, Ph.D., is Group Director
Marion R. Misch is Deputy Director.
INNOVATION INFORMATION AND ANALYSIS PROJECT

The Project began in early 1973 with the receipt of the first grant of the National Science Foundation's National Research and Development Assessment Program (RDA), which was created in August 1972 largely because of the increasingly urgent need to examine Federal support of civilian research and development efforts and to assess policies and programs designed to stimulate the rate and direction of technological innovation. The major objective of the Project (IIAP) is to build a coherent system for collecting, analyzing, and disseminating information on innovation. This includes looking into such Government policy areas as tax incentives, subsidies, trade, pertinent laws, patents, and regulation as well as the social and economic implications of innovation and the nature of the innovation process. In addition, the Project plans to provide special analytical, communicative, and educational services to its clients.

With no broad-gauged management of innovation information in existence, the need for IIAP is clear. The aim is to search and synthesize information from present sources by utilizing their services and complementing their efforts. During this operation an analytical capability will be developed which can assist in numerous ways including identification of the most relevant and significant existing literature and gaps to be filled.

Since its formation the Project has directed all of its activities toward the needs of RDA. In the near future, IIAP will begin to expand its information and analytical services to meet the needs of other people and organizations for the cost of the service.

The Project is currently able to identify and abstract articles, research reports, books, conference reports, and related materials on technological innovation. The field, its literature, and attendant management problems have never before been brought together in a concerted, comprehensive manner. Initial efforts included determining:

- those journals, periodicals, indexing/abstracting services, bibliographies, conference proceedings, books, and report literature containing relevant information;
- the optimal way of extracting information from these sources;
- the types of abstracting methods to be used; and
- how information about articles not abstracted should be disseminated.

Although many of the end products will continue to be oriented toward meeting the direct needs of RDA, a major purpose of the Project, strongly supported by the National Science Foundation, is to ensure that IIAP and its products will be of maximum use to other clients.

Acquisition lists and abstracts are being supplied to the Foundation on a regular basis. Other interested parties may receive copies of these and other products and services, on a cost-reimbursement basis according to the provisions of the initiating grant from the Foundation. It is anticipated that the IIAP Newsletter will be available free of charge for the immediate future.

As IIAP establishes and demonstrates the effectiveness of its information services, it will begin to expand its scope and magnitude of effort. Some of the activities may include:

- distributing information products (bibliographies, abstracts, etc.) tailored to the individual needs of the clients;
- achieving the capability to work with government agencies and the private sector to assist in the evaluation of a particular policy or program directed to stimulate innovation;
- providing a periodic journal or monograph series on evaluations of policy assessment, special reports and studies on assessments and annual reports on trend analysis;
- documenting legislation, executive orders, and regulatory actions that have created and modified major governmental policies and programs to stimulate or control the nature and rate of technological innovation;
- sponsoring and cosponsoring seminars, special meetings, conferences and short term instructional courses and workshops; and
- collecting a manpower or biographical file of those who are professionally involved with many of the problems associated with the innovation process.

Wesley L. Tennant, Senior Staff Scientist, is Project Manager.

Judith C. Russell is Chief Information Specialist.
GRADUATE PROGRAM IN SCIENCE, TECHNOLOGY AND PUBLIC POLICY

The graduate program in science, technology, and public policy was established in September, 1970 to provide a focused educational complement to the other activities of the Program. The graduate program, which is co-sponsored by the university's School of Public and International Affairs, is one of the few in the nation to offer a master's degree specifically in science, technology, and public policy. It is currently the largest such program (in terms of students seeking a degree) in existence. Fifty-three students have enrolled in the program to date, and in addition a number of doctoral candidates have made science policy a particular focus of their course work and dissertation research. Eight students had received their master's degree as of September 1, 1973.

The primary objective of the graduate program is the training of individuals able to understand the public policy issues posed by science and technology and to act upon that understanding. To that end, the program draws upon the total resources of the university, both in terms of faculty and courses and in terms of research capabilities, in permitting its students to develop multidisciplinary programs of study tailored to their interests and needs.

Students who complete the degree program are qualified for research and administrative positions related to science and technology policy, particularly with government agencies. Students from the program now hold positions with the National Science Foundation, the Environmental Protection Agency, the Science Policy Research Division of the Library of Congress, the Department of State and the United Nations. Also, many of the students in the program already hold jobs in related policy areas with such agencies as NASA, the military services, congressional offices, and COMSAT; these students bring a practitioner's viewpoint to the program as they carry on their own studies.

As part of the program's activities, several courses have been added to the university's offerings on topics such as "Government, Science, and Technology," "Technology Assessment and Public Policy," "Science, Technology and World Order," and "The Economics of Technological Change." These courses are taken by a wide variety of graduate students other than the program's degree candidates. The program's faculty is also involved in undergraduate teaching related to science and technology policy.

The program is directed by John Logsdon, Associate Professor of Political Science and Public Affairs. Other faculty members associated with the program include its deputy director, Henry Nau, Assistant Professor of Political Science and International Affairs; George Eads, Associate Professor of Economics; and Stephen Chitwood, Associate Professor of Public Administration. At its inception the program was directed by John Hanessian, formerly Associate Professor of International Affairs. Dean Burton Sapin of the School of Public and International Affairs is responsible for overall direction of the academic elements of the program.

Faculty members associated with the program are also involved in research efforts in which the program's students frequently act as research assistants. Among these research activities are:

- a study of the decision-making process with respect to post-Apollo space policy (Logsdon);
- an examination of changing national priorities and public policy for science and technology (Logsdon);
- a book on "International Technology and National Politics," focusing on nuclear technology programs (Nau).

The program sponsored a series of seminars during 1972-1973 on "U.S. National Goals and Technological Strategy." These seminars brought together members of the Washington policy community, faculty and research staff of the university, and the program's graduate students to discuss presentations by a series of eminent speakers.

The program's research, seminar, and curriculum development activities were supported by a grant of $116,900 awarded in July, 1972 from the National Science Foundation.
NATIONAL ADVISORY COUNCIL ON SUPPLEMENTARY CENTERS AND SERVICES

The National Advisory Council on Supplementary Centers and Services consists of twelve members appointed by the President of the United States under provisions of the Elementary and Secondary Education Act. The responsibilities of the Council as mandated by the Act are to review the administration of Title III, to evaluate programs and projects carried out under Title III, and to report annually to the President and the Congress on its findings.

Title III provides federal funds to local education agencies for innovative programs and projects designed to meet locally identified educational needs. More than one thousand projects in all areas of the elementary and secondary curriculum are currently operating in all parts of the United States and its territories.

The National Advisory Council meets some five times a year to review the operation of Title III and to set policy for Council activities. The Council maintains an office and staff in the Program of Policy Studies of The George Washington University for the purpose of carrying out its activities.

Each fiscal year since 1968, the Council has prepared and submitted to Congress and the President an annual report which makes recommendations concerning the legislation and the administration of Title III. Since 1970, the Council has published a monthly newsletter designed to inform the Title III community of national developments affecting education and of the activities of Title III projects and state administrators. The newsletter has a distribution of 3000 copies.

The Council also prepares and publishes Quarterly publications in magazine format, each reviewing and listing Title III projects in a specific curriculum area. Beginning with a Spring, 1972, issue, these have been:

"Title III in Environmental Education"
"Title III in Preschool Education"
"Title III and the World of Work"
"Title III in Guidance and Counseling"
"Title III and Changing Educational Designs"

The Summer, 1973, issue, "Title III and Cultural Diversity," reviews projects in bilingual education and ethnic studies. The Fall, 1973, Quarterly is devoted to Title III projects in educational administration and management.

The Winter, 1973, issue is on "Title III in the Arts."

In addition to the newsletter and the Quarterlies, the Council prepares occasional background research papers, prepares and presents testimony relative to Title III in Congressional hearings, and represents Title III in various national, regional, and state meetings of educational groups.

The staff is as follows:

Gerald J. Kluempke, Executive Director
Virginia Robinson, Research Associate
Gail Gross, Secretary

As of January 1974 the Council's new location is 425 Thirteenth St., N.W., Suite 529, Washington, D. C. 20004 (Tel. 963-3813).
TECHNOLOGY ASSESSMENT GROUP

Technology Assessment has been a major focus of The Program of Policy Studies since its inception in 1966. Much of the Program's work during the first years under the NASA Institutional Grant consisted of theoretical, methodological, institutional, and historical studies of Technology Assessment.

Dr. Mayo and other members of the staff provided analysis and advice to Congressional Committee staffs planning for what has become the Congressional Office of Technology Assessment, testified at Congressional Hearings, and participated in and made presentations before numerous academic and professional meetings concerned with Technology Assessment. The Program has held some 80 seminars on the subject, attended by several hundred government officials, academic personnel, and members of the research and policy analysis community. A large number of Program publications dealing with technology assessment have contributed to the technology assessment literature widely used in the U.S. and abroad.

One of the earliest major technology assessments, performed by the Program, was a study of Social Impacts of Civil Aviation, a part of the DOT-NASA Civil Aviation Research and Development Policy Project (CARD) in 1969. More recently Technology Assessment efforts have been given organizational focus in the Technology Assessment Group. The objectives of the Group are:

—To assist Federal agencies, State and local governments, and the private sector in planning, organizing, and carrying out technology assessment by providing an interdisciplinary university-based capability experienced in assessment and policy analysis;

—to contribute to the further development of technology assessment methodology, to understanding of the institutional and legal aspects of technology assessment, and to knowledge of the results and impacts of technology assessment;

—to make such contributions available to decisionmakers, to the academic and professional community, and to the public through presentations, articles, and sponsorship or participation in conferences and workshops on technology assessment;

—to involve students in performance of technology assessment, and to contribute to their professional training and to curriculum development in the university and elsewhere; and

—to develop useful Program publications in the area of technology assessment.

The Technology Assessment Group has undertaken a range of assessments of which the following are examples:

- "Technology Assessment of Solid Waste Management Practices." An assessment of solid waste management and its institutional problems in the City of Baltimore, Maryland. (NSF)
- "Quick-Response Survey of Technology Assessment Candidates and Priorities." A survey by questionnaires and interviews of Federal officials to determine candidate technologies for future assessment. (NSF)
- "Implications of Soviet Marine Expansion." Assessment of recent developments in sea-power of the U.S.S.R. (ONR)
- "Plan for Local Community Participation in Measurement of Environmental Noise." A sub-contract to Bolt, Beranek, and Newman, Inc., to participate in developing plans for a National survey of environmental noise. (EPA)
- "Alternative Future Life-Styles: Their Implications for Future Energy Demand." (Ford Foundation Energy Policy Project)
- Revitalization of Small Communities: Transportation Options." (DOT)
- "Normative Systems Analysis." An assessment of the potential of normative analysis with regard to rationale and technical conduct of comprehensive approaches to urban studies (HEW/NIMH)
• "Federal, State, and Local Mechanisms for Control of Environmental Noise." A survey and analysis of existing laws, policies, and institutional arrangements for abatement and control of noise at all levels of government (EPA).

The Technology Assessment Group includes specialists in Political Science, Law, Public Policy, Urban and Regional Planning, Economics, Community Development, and Transportation Regulation. It works closely with other Groups within the Program on a wide variety of research areas and projects.

Emphasis in Technology Assessment Group projects is on futures research, social impact analysis, and analysis of public policy options. Vary T. Coates, Ph.D., is Head of the Technology Assessment Group.
Completed and Ongoing Studies

These studies are listed in chronological order of starting date. Funding source is shown in brackets after title of each project.

1. **Organizational Conflicts of Interest in Government Contracting (NASA)**

   A report containing an analysis and evaluation of the facts developed in the study and conclusions on (a) the effectiveness of the policy and regulations under which NASA operates and the application thereof, and (b) the desirability to effect changes, modifications or implementation to any policy, rule, or regulation dealing with organizational conflicts of interest in government contracting, together with recommendations as to remedial action to be taken.

   **Staff**
   - **Principal Investigator**
     - John Cibinic, Jr.
   - **Research and Support Staff**
     - Malinda Clark
     - Gilbert Ginsburg
     - Arthur Miller
     - Ralph Nash
     - Susan Prager
   - **Student Researchers**
     - Richard Kempaner
     - Jesse Laskin
     - William C. Wolfe

2. **Program in Law, Science and Technology in the Graduate School of Law (NASA)**

   To establish a Law, Science and Technology Institute at The George Washington University, to include:
   - Establishment of a selected LL.M. program in Law, Science and Technology;
   - Development of several new courses including:
     - a. The impact of scientific concepts on legal-policy decision process;
     - b. Inter-governmental aspects of technological progress;
     - c. Legal protection against technological risk;
     - d. International institutional arrangements devoted to the peaceful uses of science and technology
   - Conduct of public conferences and professional seminars;
   - A graduate fellowship program.

   **Staff**
   - **Principal Investigator**
     - Harold P. Green
   - **Student Researcher**
     - Michael J. Wollen
   - **Lecturers**
     - Jack Oppenheimer
     - Herbert Tenzer
     - Peter Wyckoff
3. **Education in the Seventies—A Study of Educational Technology (HEW/OE)**

   A study and description of model school systems of the next decade, utilizing computer-assisted instruction (CAI). To bring to bear the experience, thought, and creativity of a wide range of educators, scientists, and administrators in the service of developing model educational systems in the 1970s in which CAI and related technology play a significant role, the participants were conducted on a traveling seminar designed to expose them to the state-of-the-art in CAI. They then prepared reports on their reactions, developing their impressions of education in the 70s.

   **Principal Investigator**: Joseph B. Margolin  
   **Research and Support Staff**: Barbara V. Higgins, Christine McLean, Marion Misch, Mary Moxness, Susanne Thevenet  

4. **Technological Innovation Policy**  
   (National Bureau of Standards & US Arms Control and Disarmament Agency)

   This project is devoted to enhancing understanding of the processes of technological innovation in society as an aid to policy makers. The first phase produced a conceptual systems model. The second phase applies the systems model as an aid in appraising existing and proposed public policy regarding technological innovation. The emphasis is on policies, designed to foster technological innovation in the civilian sector of the economy, which are responsive to the needs of society. Within this framework the project focuses on the problems of converting scientific and technical resources from defense-related research, development, and engineering to civilian, socially-oriented programs and projects.

   **Principal Investigator**: Ellis Mottur  
   **Research and Support Staff**: Roxanna Johnson, Pamela Lucas, Carolyn Vetter

5. **Preparation and Evaluation of a Series of Papers for Presentation to the Commission on Marine Science Engineering and Resources (COMSER)**

   This project includes three separate but concurrent tasks. Task A consisted of a review of published studies on the organization of Federal programs in science and technology. Task B consisted of a review of civil and military interests in and responsibilities for advancing new technologies, with particular reference to the development of a national marine science program. Task C consisted of a review of the interests of the public and private sector in advancing new technologies, and of the means for bridging these interests and for facilitating the transfer of technology.

   **Principal Investigator**: Clarence Danhof  
   **Research and Support Staff**: Pamela Rugg  
   **Consultants**: Fred Brown, Stephen Chitwood, Enid Schoettle
### COMPLETED AND ONGOING STUDIES

#### 6. Evaluvative Mechanisms for the Public Experimental Program of the National Endowment for the Humanities (National Endowment for the Humanities)

To explore alternative evaluation models to be developed for and tested within the Experimental Regional Grants Program of the National Endowment for the Humanities.

The Experimental Regional Grants Program provides small experimental grants to various types of institutions in different parts of the country to conduct a variety of humanities-related activities on a regional and local level. To provide policy guidance for future programs, each experimental activity must be documented and assessed. The alternative evaluation models approach will utilize varying measurement techniques and should enhance understanding of each experimental project. More importantly, the results should provide insights to the complex questions of the evaluation and measurement of public supported social action programs in the humanities.

**Title/Sponsor**

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<th>Title/Sponsor</th>
<th>Staff</th>
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| Evaluative Mechanisms for the Public Experimental Program of the National Endowment for the Humanities (National Endowment for the Humanities) | Principal Investigators  
Guy Black  
James Mahoney  
Research and Support Staff  
Linda Rosenthal  
Patricia Tengas  
Mary Helen Whalen  
Consultants  
Marie Bestul  
Susan Klaus  
Juana Wallach  
David Weeks  
Isaac Welt  
Geraldine Wooldridge |


The basic objectives of this project are: (a) to develop methods for improving the dissemination of, and the effectiveness of information about, the availability of government-sponsored, non-written materials; (b) to develop alternative methods for increasing the effective distribution of government-sponsored nonprint materials.

**Title/Sponsor**

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<th>Title/Sponsor</th>
<th>Staff</th>
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</thead>
</table>
| Dissemination of Audiovisual Materials in American Education (HEW/DE) | Principal Investigator  
Joseph B. Margolin  
Research and Support Staff  
Helen Ajay  
Clarence H. Daniel  
James E. Mahoney  
Phyllis McDonald  
Barbara Merritt  
Marlon Misch  
Margaret Moss  
Nan Motolinsky  
Diane Pierce  
Linda Taylor  
Student Researchers  
Kathryn Hensley  
Jenny Johnson  
Mary Elizabeth McIlvane  
Isolde Weinberg |


The current operations of our urban institutional complex composed of schools, police, courts and corrections, utilize procedures that amplify conditions of deviant and criminal behavior. In relating public institutional actions associated with the processing of juveniles through the juvenile control system, an analytic model was utilized, guided by a general systems approach. The District of Columbia institutional network was studied for this purpose. The Juvenile Control System (schools, police, courts, juvenile correctional institutions) was described consistent with the theoretical approach developed. Administrative data was employed to demonstrate the nature of breakdown of social control within the general system. Manifestations of this breakdown occurred at fairly early points (grades 3-6) and it was during this same period that the use of drugs was found to be employed in controlling certain youths.

**Title/Sponsor**

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<th>Title/Sponsor</th>
<th>Staff</th>
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| Behavioral Systems Approach to the Prevention and Control of Delinquency and Crime (Justice/LEAA) | Principal Investigator  
Joseph L. Tropea  
Research and Support Staff  
Thomas Burns  
Charlotte Kuenen  
John Mahoney  
Student Researchers  
Susan Ames  
Bernard Grochmal  
E. D. Marwick  
Margaret Raskin  
James Thomas |

To delineate the major policy threads of the 1945-1968 period, focusing on the outlook from Western Europe, taking into account the peripheral interests and influences of the Soviet Union and the United States.

Staff
Principal Investigator
John Hanessian
Research and Support Staff
Clarence Danhof
Stuart Greenberg
Barbara Higgins
Robert Jordan
Margo von Kaenel
John Logsdon
Susan Papadopoulos
Student Researchers
Thomas Bolle
Susan Croft
William Kallon
Norma Katelvero
Jeffery Leonard
Diana Naugle
Neil Seldman
Meredith Spencer
Janice Udell
Christine Young
Consultant
Katherine Warden

10. Study of Private-Federal Research and Development Relationships (NSF)

To complete the analysis of data collected in 1965-7 from industrial research and development laboratories in three industries, for the purpose of determining the impact on the performance of research and development by those laboratories from involvement with the federal government.

Principal Investigator
Guy Black
Research and Support Staff
Betsy Amin-Arsala
Susan Doscher
Eileen Sussman

11. A National Criminal Justice Reference System (Justice/LEAA)

A two-phase research effort, (i) to identify appropriate user groups, isolate their most critical reference needs, and develop an outline-type design of a dissemination system which will fill some of the most immediate needs; and

(ii) assuming the development of an active dissemination program by the Law Enforcement Assistance Administration, assessment mechanisms were developed to measure utility of the services as they expanded. More detailed user needs studies were performed using the in-depth techniques of information flow and decisional analysis. In addition, exploration was made of ways to educate potential users in the benefits to be derived from using information.

The model for an information reference system recommended in the final report of this study was the basis for a system now being used and national in scope, and which is broadening into international application.
COMPLETED AND ONGOING STUDIES

12. Social Impacts of Civil Aviation and Implications for R&D Policy (NASA/DOT)
   
   This study was to identify social impacts, both beneficial and detrimental, which would or could flow from introduction of advanced civil aviation systems. This future-oriented technology assessment was performed by an inter-disciplinary team of social scientists, natural scientists, and engineers, and a broad range of social impact areas was investigated which included economic, environmental, political, sociological, psychological, legal, and urban/regional developmental factors. In keeping with the fundamentally inter-disciplinary nature of such a study, the results are presented primarily in their finally integrated form rather than as a compilation of separate disciplinary inputs.

   Title/Sponsor

   1970 April for R&D Policy (NASA/DOT)

   Research and Support Staff
   Betsy Amin-Amsalas
   Marie Beaconsfield
   Karen Bell
   Penny Blum
   James H. Brown
   Vuyi T. Coates
   Clarence H. Danhof
   Susan Doscher
   Richard F. Ericson
   Joseph Foa
   Kathryn Hensley
   Mary Holman
   Jacquelyn Howard
   Raphael Kasper
   Susan Klaus
   Eva Maestas
   James E. Mehoney
   Joseph B. Margolin
   Phyllis McDonald
   Marjoe R. Misch
   Jean Ruffin
   Henry Solomon
   Theodore Suranyi-Unger
   Linda Taylor
   Mary Helen Whalen
   Geraldine Wooldridge

   Student Researchers
   Margaret Chan
   Ruth Cooperman
   Kirk Dublin
   William Fischer
   Phillip Graham
   Stuart Greenberg
   Dee Ann Houston
   Stephen Lingenfelter
   Michael Smith
   Marion Sterling
   Edward Studholme
   Frederick Wood

   Consultants
   Joseph D. Blatt
   George Brankey
   Richard Myrick
   Mazen Olson, Jr.
   Howard Reese
   Robert C. Richardson
   Stephen G. Saltzman
   Richard E. Tiller

   Staff

   Principal Investigator
   Louis H. Mayo

   1970 April
   (16 months)
   July 1971

13. Dissemination and Utilization of Educational Technology Materials (Ford Foundation)
   
   To prepare for publication data collected for a report to the U.S. Office of Education on the "Analysis of the Need for and Feasibility of More Effective Distribution of Government Supported Non-Written Material." Since the data collected far exceeded the objectives of the contract, and the findings are of value to education, this book will provide an understanding and some clarification of 1) the dynamics of the dissemination process in education, 2) the role of non-book media in education, and 3) educational technology systems management.

   Title/Sponsor

   1970 April
   (26 months)
   May 1972

   Research and Support Staff
   Karen Bell
   Kathryn L. Hensley
   Phyllis McDonald
   Marion R. Misch

   Principal Investigator
   Joseph B. Margolin
14. Homeowner’s Title Registration Corporation:
A Program to Reduce the Land-Related Costs of Housing (HUD)

To present a system of land acquisition and use which is designed to significantly reduce the cost of land in residential building costs; to make the real property transfer from one owner to another easier, quicker and less costly; to attract mortgage funds from contract thrift institutions regardless of the fluctuations of the general financing market; and to permit those government subsidies that are involved to be made in the form of investments, carrying at least a sound potential for eventual recoupment of the subsidies.

Finally, while the system incorporates as a basic concept the leasing of land for residential purposes rather than the traditional ownership of land, it is designed to keep the fee ownership in the private hands of a neighborhood or community, with individual parcel occupants acquiring a stockholder-type participation in the land asset as a component element in their purchase of a use of the land. For all practical considerations, the purchased use will provide the same functions now available to the individual through acquisition of a fee title, while eliminating some of the detrimental aspects of a fee holding.

15. Technology Assessment Implementation Project
(1970 July (36 months) June 1973)

A study to place some effort on the understanding of the implementation process as opposed to the performance of technology assessment, since the value to society of any technology assessment depends upon the ways in which its results are used. The objective of the project was to describe the process of assessment implementation as it now exists and to develop new and potentially valuable concepts and proposals for future research. In order to initiate discussion among academic, industrial, and governmental personnel about the technology implementation process, a professional seminar series of eight seminars gathered individuals from a wide range of disciplinary and institutional backgrounds to explore various aspects of the subject.

The purpose of the study, to be made in accordance with section 11 (p) (4) of the Water Quality Improvement Act of 1970, was to determine the need for measures to provide for financial responsibility and limitation of liability, other than those measures contained in 11 (f) (1), (2), and (3), and of 11 (p) (1) of the Act, to pay for the costs of removing discharged oil and paying all damages resulting from the discharge of oil into the navigable waters of the United States or the contiguous zone, by vessels, offshore facilities and onshore facilities.

17. Communications Technology and the Developing Nations (U.S. AID/AED)

Strategies were developed for utilizing communications media to bring family planning, basic education, and nutrition education programs to the rural and urban poor. General principles and programs were developed in the fields of family planning, nutrition, and basic education and were then applied more specifically to Colombia, the Republic of Zaire, and Indonesia. Thus application across a broad spectrum of nations can be achieved. The product includes consultation strategies designed for the process of cooperative work between nations, as well as programs, training and evaluation strategies.
18. April 1971 (6 months) Sep. 1971

Title/Sponsor

Technology Assessment Applied to Urban Solid Waste Disposal (NSF)

This study applies the methods of technology assessment to solid waste management in the Baltimore city area. In this case, technology assessment considers the technological, economic, political and social factors that are related to the problem of solid waste management. These factors are assessed in a comprehensive and integrated manner so that optimal solutions to this problem can be proposed.

Staff

Principal Investigators
Louise H. Mayo
Betsy Amin-Arsala
Henry E. Brady

Research and Support Staff
Margo von Kaenel

Student Researchers
William Fisher
Audrey Hassanein
Jacquelyn Howard
Corazon Siddayao


Facilities and Support Services for 1971 Summer Employment Program: A Seminar-Lecture Series (EPA)

A new course on the Environmental Crisis in the Washington metropolitan area investigating selected problems in air and water pollution, waste disposal and land use. It included a series of presentations by representatives of regulatory agencies of the various political jurisdictions in the metropolitan area. Leaders of local ecological organizations participated in planning the workshop course.

Staff

Principal Investigator
John M. Logsdon

Research and Support Staff
Henry Brady
Benita Fineman


Laws and Regulatory Schemes for Noise Abatement (EPA/ONA)

To undertake a survey of existing Federal, State, and local laws, ordinances, and regulations governing the abatement and control of environmental noise, and to assess the effectiveness of the administration and enforcement of such provisions. The completed report provides data and analysis on governmental noise regulation for the report to be made by the Administrator of the Environmental Protection Agency to the President and the Congress pursuant to Section 402(b) of the Noise Pollution and Abatement Act of 1970.

Staff

Principal Investigator
Louis H. Mayo

Research and Support Staff
Judith Bowen
Vary T. Coates
Margo von Kaenel

Student Researchers
Marianne Bolgar
Steffen Grae
Audrey Hassanein
Christina Olson
Edward Shay
Corazon Siddayao
Stephan Somerstien
Robert Ware
John Zimmerman


Regional Seminars on Education Problems (HEW/OE)

To assist in the implementation of a series of four regional seminars composed of practitioners in educational research and development with the Commissioner's Planning Unit for the National Institute of Education (NIE). The regional seminars are intended to provide a critical review of NIE planning to date so that any elements which are not well understood can be clarified; and to involve practitioners in development of plans, thus promoting both creative contribution and final acceptance.

Staff

Principal Investigator
Joseph B. Margolin

Research and Support Staff
Marion R. Misch
Josef Munro
Title/Sponsor

22. The Space Program During the 1970's: An Analysis of Policy Making (NASA)

To complete an on-going study requested by NASA. The two major portions of the study are:
- A narrative section, based on interviews with participants in the policy-making process and documents from NASA and other files, containing a detailed reconstruction of the process under examination; and
- An analytic section discussing the forces influencing the outcome of the policy-making process and evaluating the NASA planning and policy analysis activities of the period in terms of those forces and that outcome.

Principal Investigator
John M. Logsdon

Student Researchers
Jennifer Bond

23. Development of International Educational Communications and Technology (State Dept)

The conceptualization and study of the nature and alternative characteristics of an organization which would facilitate development of international educational communications and technology. A charter and a provisional board of directors will be developed, as well as the schema for EdComTech's relationship with existing institutions. Methods for funding will also be postulated and proposed.

Principal Investigator
Joseph B. Margolin

Research and Support Staff
Karen Bell
Marion Misch

24. Evaluation Case Studies (Russell Sage Foundation)

To bring together ten to twelve evaluations, and to preface each with some background on the reason the evaluation was undertaken by the sponsoring agency, some facts about the procurement as perceived by the sponsoring agency and as seen by the contractor, and some discussion of difficulties encountered in doing the study both in regard to relations with the sponsoring agency and with the field activity or activities being analyzed. Following this discussion will be an abstract of the study including methodology and results. A final section will cover the reception of the evaluation by the sponsor and the impact on policy inasmuch as the latter can be determined.

Principal Investigator
James Abert

Student Researchers
Carol Reitz
Joan Szabo
Stephen Szabo

25. Highway Interchange Effects on Churches (DOT/Federal Highway Administration)

This project researched the effects of 'close-by' highways on several churches in the Washington, D.C. area. The general relationship between churches and highway interchanges had already been considered in a pilot study ("Highway Interchange Locations for Churches—A Pilot Study on Washington, D.C."). Our project relied on that survey to provide a context in which these case studies became more meaningful. The trend of the findings of this study confirmed the pilot study's finding that areal orientations (membership and concern) of the churches are strongly related to unfavorable and favorable evaluations of the effects of closeby limited-access highways.

Principal Investigator
Joel Garner

Research and Support Staff
Margo von Kaenel

Consultant
Joseph L. Tropea
26. **Assessment of ESEA Title III Projects (HEW/OE)**

Although $700 million was spent on the Title III program of the Elementary and Secondary Education Act (ESEA) between 1965 and 1971, no concentrated effort had been made on the national level to determine what was working. The National Advisory Council on Supplementary Centers and Services, in cooperation with the 54 state and territorial advisory councils, proposed this study to identify successful Title III educational programs supported with Title III funds. The study identifies ten to twenty programs which have been recommended by their state educational agencies, field-assessed, and subjected to rigorous evaluation. In addition to a monthly newsletter designed to inform the Title III community of national developments affecting education and of the activities of Title III projects and state administrators (distribution 3000 copies), the Council prepares and publishes a Quarterly magazine, each reviewing and listing Title III projects in a specific curriculum area. Beginning with a Spring, 1972 issue, these have been:

- "Title III in Environmental Education"
- "Title III in Preschool Education"—Summer 1972
- "Title III and the World of Work"—Fall 1972
- "Title III in Guidance and Counseling"—Winter 1972
- "Title III and Changing Educational Designs"—Spring 1973
- "Title III and Cultural Diversity"—Summer 1973
  (reviewing projects in bilingual education and ethnic studies.)

The Fall 1973 Quarterly is devoted to Title III projects in educational administration and management. The Winter 1973 issue is on "Title III in the Arts."

27. **Effect of Changing Patterns and Levels of Federal Research and Development Funding on Research and Development Funding by Industry (NSF)**

The relationship between changes in private and government R&D funding in industry can be expressed by a multiplier. This study collected data and estimate multipliers for different types of industries, laboratories, business firms and technologies. Because of different multipliers, changes in the level of federal funding in any one category, or shifts in spending from one category to another affect differentially the national total of R&D funding. Multiplier analysis can be used to refine analysis of demand for scientific manpower resources, or to show the effects of proposed shifts in the allocation of federal R&D funds. Estimated values of multipliers were obtained through econometric analysis of data collected during a three phased field survey conducted during July-August 1971, January 1972, and July-August 1972.
### COMPLETED AND ONGOING STUDIES

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A survey of all federal agencies and their major components, followed by indepth interviews with approximately 70 officials, to identify loci within federal agencies where technology assessments are performed, and to evaluate the process as a technique for directing and controlling technological development. The study provides a base of information for improvement of the process and for development of new technology assessment mechanisms where the study indicates that they are needed. | Principal Investigator  
Vary T. Coates |
| **Plan for Local Cooperation and Participation in Measurement of Environmental Noise** (Bolt-Baranek & Newman)  
To develop a program for the measurement of environmental noise in the community and its associated human response. | Principal Investigator  
Vary T. Coates  
Support Staff  
Ophelia Peters  
Helen Sadtier  
Student Researchers  
Martin Echter  
Jack Zakim |
| **Implications of Soviet Marine Expansion** (DOT/ONR)  
To collect all relevant data concerning all facets of the increasing strength of Soviet marine expansions: naval vessels, oceanographic research vessels, merchant marine and fishing fleet. All available sources, including Russian materials, were utilized. Following a normative approach, an analysis was made in order to identify and discuss the implications of Soviet marine expansion. | Principal Investigator  
John Hanessian  
Research and Support Staff  
Ruth Ann Day  
Laurel Tongren  
Student Researchers  
Susan Coady  
Audrey Hassanein  
Michael Kalman  
Consultants  
Howard C. Reese  
William J. Spahr  
Ronald Waldheger |
| **The Interrelationship of Urban Governmental Functions to Those at the State, Regional, and Federal Level** (Urban Studies, Inc.)  
To support a series of ‘professional seminars’ involving university, government, industry and R&D firm representatives to devote their attention to matters such as: (1) The need for and the character of the analytical capability required for a ‘quick response’ mechanism to serve urban governmental needs; (2) Opportunities for the decentralization of public services and governmental functions through the use of developing telecommunications technology: CATV, Closed-circuit TV, etc.; (3) Application of new technologies which might enable local governments to more effectively and economically comply with recent court decisions requiring ‘equality of public services’ to all residents within the municipality; and (4) Most effective allocation of activities (and responsibilities) among the Federal-local levels of government, including activities and operations requiring cooperative, integrated efforts. | Principal Investigators  
Louis H. Mayo  
Vary T. Coates  
Consultant  
Betsy Amin-Arsala |
32. 1972 February (23 months) Dec. 1973

Title/Sponsor

Effectiveness of Illustrated Print Media (Non-Verbal) on Family Planning Attitudes Among Colombians (State Dept/AID)

An evaluation study to assess the effects of two illustrated, largely nonverbal, booklets designed to improve attitudes toward the acceptance of family planning among illiterate and semi-literate populations in Colombia.

In addition to the effects of the booklets on target audience knowledge and attitudes towards family planning, further results assessed are:

- The impact of the delivery systems for booklet on target audience family planning attitudes;
- The effects of the booklets and their delivery on the family planning agencies involved;
- The process by which booklets spread through communities after delivery to initial target audience members, and the pattern of this informal dissemination;
- Recommendations for new policy dealing with the dissemination and utilization of materials.

Staff

Principal Investigator
Joseph D. Margolin

Research and Support Staff
Karen Bell
Margery Kemper
Manon R. Mitch
Judith Naiman
Barbara Schickman
Martha B. Traini
Sheri Wolff

33. 1972 February (24 months) Jan. 1974

Title/Sponsor

Normative Systems Analysis (HEW/NIMH Fellowship)

An assessment of the potential of normative analysis with regard to rationale and technical conduct of a more comprehensive approach to urban studies.

Staff

Principal Investigator
Milton Marney

34. 1972 March (27 months) May 1974

Title/Sponsor

Citizen Group Uses of Scientific and Technological Information in Nuclear Power Cases (NSF)

An analysis of the mechanisms by which citizen groups obtain and utilize scientific and technological information in making cases involving technological projects with environmental implications.

Staff

Principal Investigator
Steven Ebbin

Research and Support Staff
Audrey Hassanein
Margo von Kaenel
Raphael Kasper

Student Researchers
John Zimmerman

35. 1972 May (21 months) Jan. 1974

Title/Sponsor

Evaluation of Guidelines and Noise Related Environmental Impact Statements (EPA)

To examine a representative sample of environmental impact statements to determine the extent to which noise has been treated as a potential environmental effect, and the extent to which such treatment has been adequate to assure protection of communities and citizens.

Staff

Principal Investigator
Louis H. Mayo

Research and Support Staff
Betsy Amin-Araia
Vasy T. Coates
Gertrude Delman
Mary Ducy
Audrey Hassanein
Helen Sadtler

Student Researchers
Barry Israel
Richard Rice
Edward Studholme
Robert Ware
Jack Zakim


Title/Sponsor

Issues and Concerns in Career Education

A special pilot program of seven seminars to expose the interns to the views of a variety of executives from both the public and private sectors about the needs and adequacy of educational systems in preparing the nation's youth for lifetime careers. The study analyzed the successes and failures of traditional educational systems and special nonpublic school manpower training programs in preparing people for employment, and evaluated the impact of such programs in career selection.

Staff

Principal Investigator
Steven Ebbin

Research and Support Staff
Kathy Crockett
Ann B. Finkelstein
Raphael Kasper
Kristin Larson
Elizabeth Ravnheil
Margo von Kaenel

Career Education Fellows
Rudolph Bryant
Harold R. Hicks
Albert Lorente
### COMPLETED AND ONGOING STUDIES

#### 37. Graduate Program in Science, Technology, and Public Policy (NSF)

**Title/Sponsor**
Graduate Program in Science, Technology, and Public Policy (NSF)

**Support**
Support for a program of research and instruction in science, technology and public policy at GWU. This program will be built upon the existing research efforts of the PPSST and the master’s degree program in science, technology and public policy of the School of Public and International Affairs. Program activities would be focused on a broad central theme: “Alternative Strategies for U.S. Science and Technology Policy.” There would be four elements in the proposed program: (1) a research project, “Changing National Priorities and Public Policy for Science and Technology: An Examination of Decision-Making Institutions and Processes;” (2) a professional colloquia series initially focused on “U.S. National Goals and Technological Strategy;” (3) a continuing faculty seminar on science, technology, and public policy; and (4) development of new curricular offerings in relevant topics.

**Staff**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>John M. Logsdon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Support Staff</td>
<td>Mark S. Frankel, Audrey Hassanein, Marcia Smith, Shelly Wax, Linda Yelton</td>
</tr>
<tr>
<td>Student Researchers</td>
<td>Michael Bass, Jennifer Bond, Rosemary Otaix, Deborah Cobin, Robert Ehrhardt, Benita Finegan, Joanne Gorman, J. Michael Hobert, Rodney Huff, Mary Mogee, Marc Schieber, David Wald</td>
</tr>
</tbody>
</table>

#### 38. Personnel Mobility Assignment (NSF/OIP)

**Title/Sponsor**
Personnel Mobility Assignment (NSF/OIP)

**Support**
To assist the NSF Office of International Programs in seeking to develop closer coordination between OIP and the Foundation’s research directorates, and to introduce into OIP new ideas, approaches, and management techniques from the university sector.

**Staff**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Deborah Cobin</th>
</tr>
</thead>
</table>

#### 39. Personnel Mobility Assignment (NSF/RANN)

**Title/Sponsor**
Personnel Mobility Assignment (NSF/RANN)

**Support**
As a program manager within the Office of Exploratory Research and Problem Assessment, to focus particular attention on the interrelationships between national needs and international consequences with regard to research and development. Within the established program plan of ERPA, to concentrate on innovation in the private sector, competitiveness in the international market, education for a continually changing society, and long-range planning in the public and private sector.

**Staff**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>John Hanessian</th>
</tr>
</thead>
</table>

#### 40. Analytical Services Relating Communications Technology to Development (State Dept/AID)

**Title/Sponsor**
Analytical Services Relating Communications Technology to Development (State Dept/AID)

**Support**
To develop alternative strategies for the use of communication media to improve the quality of life in selected less developed countries (LDC). These strategies led to country-specific project plans worked out in collaboration with the USAID Mission and LDC personnel. The Educational Policy Group developed alternative strategies for utilizing communication media (TV, radio, etc.) for the improvement of nonformal education. The program was devoted generally to rural populations. This study is a follow-on to one done in 1971 on Communications Technology and the Developing Nations.

**Staff**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Joseph B. Margolin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Support Staff</td>
<td>Karen Bell, Gail A. Kolker, Marion R. Misch, Judith Naiman, Barbara Shickman, Martha Traini, Sherri Wolff</td>
</tr>
<tr>
<td>Consultants</td>
<td>Evelyn Anisfeld, Jack Barkenbus, Philip H. Coombs, Alhawa Garcia-Pena, Katanga Heilman, Marilyn Lichtman</td>
</tr>
</tbody>
</table>

To perform a "quick-response" survey of Federal Executive Agencies for the purpose of generating a comprehensive list of current and potential technological inventions, innovations, and applications for which technology assessment is needed; and to categorize such developments and innovations in terms of a number of relevant criteria (such as imminency, potential significance of impact, policy relevance, and the estimated level of effort needed) in order to assist in the selection, scheduling, and design of appropriate assessment efforts in the near future and others to be developed over time.

42. Interpretation of Energy Demand Scenarios into Life-Style Scenarios (Ford Foundation Energy Policy Project)

To formulate alternative life-style scenarios for the future, to relate these to energy consumption, and to derive from them corresponding alternative energy demand scenarios.

The alternative future energy demand scenarios can then be compared to the alternative future energy supply scenarios to be developed by RFF. The future life-style scenarios are intended to provide graphic and plausible interpretations of the implications of national energy policy options in a form which is meaningful and useful for the public and for public decision-makers.

43. Innovation Information and Analysis Project (NSF/RDA)

To build a coherent system for collecting, analyzing, and disseminating information on innovation, including looking into such Government policy areas as tax incentives, subsidies, trade, pertinent laws, patents, and regulation as well as social and economic implications of innovation and the nature of the innovation process. The aim is to search and synthesize information from present sources by utilizing their services and complementing their efforts.
COMPLETED AND ONGOING STUDIES

**Title/Sponsor**

**44.** An Integrated Strategy for Aircraft/Airport Noise Abatement (EPA/ONA)

The study project will provide the legal-institutional analysis required for the implementation of EPA's responsibilities pursuant to § 7 of the Noise Control Act of 1972 (Aircraft Noise Standards). The approach will be to identify the "noise control" choices available at critical decision points in the developmental process of airport-aircraft planning, implementation and operations. The study will also examine the aircraft noise prevention or abatement strategies available at each such decision point, the availability or unavailability of legal-institutional instruments to implement such strategies, the extent to which existing authority has been effectively applied to noise abatement programs, the more serious deficiencies in existing authority (or other constraints) which have precluded effective noise abatement at the Federal, State and local levels, and recommendations for the modification or enlargement of existing authority so as to abate aircraft noise intrusions to a level consistent with the "public health and welfare."

**Staff**

- **Principal Investigator:** Louis H. Mayo
- **Research and Support Staff:**
  - Betsy Amin-Arsala
  - James M. Brown
  - Gertrude Delman
  - Dorn McGrath
  - Carol Nelson
  - Edward Robbins
  - Edward Studholme
  - Ernest Weisz
  - Student Researchers:
    - Paul Aiken
    - Edward F. Alibas
    - James Bruce
    - Paul Gaskin
    - Joan Gerber
    - Daniel Gutman
    - Swadesh Kalsi
    - Alan Kazalir
    - Jay Kivits
    - Athanasios Paroutsas
    - Richard E. Price
    - Jared Schaff
    - Onkar Sharma
    - Michael Vollmer
    - Margaret Wekes
    - Alan Wiener
    - Blaine Yamagata
- **Consultants:**
  - Allison Dunham
  - Alvin Greenwald
  - Jan Krasnowiecki
  - Stephen I. Lingenfelter
  - James B. Minor
  - Sheldon Plagge
  - Robert D. Rudich
  - Raymond A. Shepanek
  - David Standley
  - Joseph Vittek, Jr.
  - Nicholas C. Yost

**45.** Revitalization of Small Communities Through Transportation (DOT/OS)

The research is based on a two-part hypothesis: that small towns in America represent a valuable resource in solving some of our pressing urban problems, and that new transportation policies and technologies will enable the exploitation of this resource. The purpose of this research is to explore the broad factors which have led to the decline of small towns and how the trends of decline may be reversed through transportation related actions.

The study will be broad in scope, focusing upon social, political, and economic aspects of the problem, as well as the purely technological. All transportation modes will be treated with special attention given to new technologies such as TACV and VTOL. Methodology employed will include, as necessary, the range of engineering and economic analysis, as well as legal, institutional, and social impact analyses.

The results of this research will be a better understanding of the role of the small town in America and in turn, of the role of transportation in small town utilization. Policies for application of transportation technology to small towns will be recommended.

**Staff**

- **Principal Investigator:** Vany T. Coates
- **Research and Support Staff:**
  - Joseph Margolin
  - Roy L. Marx
  - Charles Stewart
  - Edward Studholme
  - Ernest Weisz
- **Student Researchers:**
  - Rodney Frame
  - Mona Jaffe
  - Shelley Mastran
  - Judy Naimon
  - Wendy Schacht
- **Consultant:**
  - Robert Anthony
Title/Sponsor

Urban Transportation Research and Training Project (DOT/UMTA)

To develop recommendations for the Urban Mass Transportation Authority (UMTA) for possible revisions to the UMTA University Program. Broadly this would include detailed study, design, and development work to determine how research and training centers based at institutions of higher learning could best be organized, what they could do, and how their activities could be interfaced with urban transportation policy and program requirements.

Staff

Principal Investigator
Wesley L. Tennant

Research and Support Staff
Vary T. Coates
Dana Friedman
Edward Studholme
Theodore Suranyi-Unger

Student Researcher
Rodney Frame

Consultants
Darcia Bracken
Charlton R. Price
### SUMMARY

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<td>16. The Influence of 'Scientific' Data on Decisional Behavior in Contexts requiring the Evaluation of the Social Costs of Environmental Noise Intrusion ................................................................. 69</td>
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<tr>
<td>February-June 1973 (7 seminars)</td>
</tr>
<tr>
<td>20. Fellowship Program on Issues and Concerns in Career Education .............. 79</td>
</tr>
</tbody>
</table>
1. Seminar Series on
THE IMPACT OF TECHNOLOGY ON HUMAN VALUES
Chairman: Harold P. Green

Papers were presented as follows:

1. The Supersonic Transport and the Sonic Boom
   April 3, 1967—Herbert Tenzer (D.-NY)
   Member of Congress

2. Medical Experimentation on Human Beings
   May 8, 1967—Professor David J. Sharpe
   George Washington University
   and A. E. Parrish, M.D.
   George Washington University

3. Weather Modification—a) Legal and Social Aspects
   June 5, 1967—Jack C. Oppenheimer, Assistant Counsel
   National Science Foundation

   b) Scientific Prospects
   Peter Wyckoff
   National Science Foundation

4. Computer Technology and Social Imagination
   October 2, 1967—Robert L. Chartrand
   Science Policy Research Division
   Legislative Reference Service
   Library of Congress

5. Public Understanding of Radiation Protection
   December 4, 1967—Lauriston S. Taylor, President
   National Council on Radiation Protection and Measurements

Participants:
Frank B. Allan
Professor of Anatomy;
Coordinator of Teaching Aids
GWU Medical School

Murray D. Ashton
United Kingdom Scientific Mission
The Embassy of Great Britain

Werner Baum
Deputy Administrator
Environmental Science Services Administration

Irwin H. Billick
Legislative Reference Service
Library of Congress

Guy Black
Senior Staff Scientist
GWU Program of Policy Studies

W. H. Boone
Committee on Science and Astronautics
U.S. House of Representatives

William D. Carey
Assistant Director
Bureau of the Budget

William G. Colman
Executive Director
Advisory Commission on Intergovernmental Relations

Joseph Cooper
School of Government and Public Affairs, American University
School of Government, Howard University
Francis P. Cotter  
Vice President  
Westinghouse Electric Corporation

Clarence H. Danhof  
Senior Staff Scientist  
GWU Program of Policy Studies

Leo Goodman  
Industrial Union Department, AFL-CIO;  
Secretary, Atomic Energy Technical Committee

Irving Gray  
Professor of Biology, Georgetown University;  
Director, Washington Colloquium on Science and Society

Harold P. Green  
GWU Professor of Law

Norman Kaplan  
Senior Staff Scientist  
GWU Program of Policy Studies

James E. Mahoney  
Senior Staff Scientist  
GWU Program of Policy Studies

Joseph B. Margolin  
Senior Staff Scientist  
GWU Program of Policy Studies

Louis H. Mayo  
Vice President for Advanced Policy Studies;  
Director, GWU Program of Policy Studies

Michael Michaelis  
Manager, D.C. Branch  
Arthur D. Little, Inc.

Clarence Mondale  
GWU Professor of American Civilization

Ellis Mottur  
Senior Staff Scientist  
GWU Program of Policy Studies

Robert P. Multhauf  
Director, Museum of History and Technology  
The Smithsonian Institution

Brice O'Brien  
National Coal Association

Harold Orlans  
Senior Staff Member  
The Brookings Institution

Walter A. Radius  
Office of Assistant Administrator for DOD and  
Interagency Affairs  
NASA

Leo Schubert  
Professor of Chemistry  
American University

Chalmers Sherwin  
Office of Science and Technology  
Executive Office of the President

Stephen Strickland  
Associate Director  
President's Commission on White House Fellows

William J. Trainor  
Special Assistant to the Director  
Office of External Research  
Department of State

F. Joachim Weyl  
Special Assistant to the President  
National Academy of Sciences
2. Seminar on
SOCIAL CHANGE IN THE AMERICAN VALUE SYSTEM
Moderator: Clarence Mondale
Professor of American Civilization
George Washington University

Change, Social Problems, and Political Tensions
November 18, 1967—Seymour M. Lipset
Professor of Government and Social Relations
Center for International Affairs
Harvard University

Critique and Commentary by John P. Roche
Special Assistant to President Johnson
The White House

Participants:
David Z. Beckler
Office of Science and Technology
Executive Office of the President
Guy Black
GWU Program of Policy Studies
Robert G. Brown
GWU Professor of Sociology
William Carey
Bureau of the Budget
Clarence Danhof
GWU Program of Policy Studies
Henry David
Division of Behavioral Sciences
National Academy of Sciences
Lloyd H. Elliott
President, GWU
Nathan Glick
United States Information Agency
Irwin P. Halpern
Policy Analysis Staff, NASA
John Hanessian
GWU Program of Policy Studies
Barbara H. Kaplan
GWU Department of Sociology
Robert H. Land
General Reference and Bibliography Division
Library of Congress
Hugh LeBlanc
GWU Professor of Political Science
Joseph B. Margolin
GWU Program of Policy Studies
Louis H. Mayo
GWU Vice President for Advanced Policy Studies;
Director, Program of Policy Studies
Ellis Mottur
GWU Program of Policy Studies
Mancur Olson
Deputy Assistant Secretary for Social Indicators
Department of Health, Education, and Welfare
Harold Orlans
The Brookings Institution
Harvey S. Perloff
Regional and Urban Studies
Resources for the Future
Henry W. Riecken
Social Science Research Council
R. H. Schlagel
GWU Professor of Philosophy
Duane Scribner
Administrative Assistant to Senator Walter Mondale
Willis H. Shapley
Associate Deputy Administrator, NASA
Robert G. Smith
GWU Program of Policy Studies
Wilcomb E. Washburn
Department of American Studies
The Smithsonian Institution
Charles R. Wright
Department of Sociology and Social Psychology
National Science Foundation
Michael Young
Social Science Research Council of Great Britain
3. Seminar Series on  
SYSTEMS AND CYBERNETICS CONCEPTS IN UNIVERSITY CURRICULA  
Chairman: Richard F. Ericson  
Professor of Business Administration  
George Washington University  

1. Systems Concepts and Interdisciplinary Curricula  
   February 28, 1968—Karl Deutsch  
   Professor of Government, Harvard University  

2. Systems Concepts and Management Curricula  
   March 22, 1968—George Kozmetsky  
   Dean, School of Business Administration  
   University of Texas  

3. General Systems Research and Interdisciplinary Studies  
   April 28, 1968—Kenneth Boulding  
   Director, Institute of Behavioral Sciences  
   University of Colorado  

4. Interdisciplinary Synthesis: The Academic Role in Institutional Adaptation  
   December 19, 1968—Milton Marney  
   Advanced Research Department  
   Research Analysis Corporation  

5. Interdisciplinary Research and Study Groups: The RAND Experience  
   February 14, 1969—Roger Levien  
   Social Sciences Division, The RAND Corporation  

   April 11, 1969—Professor John Ford  
   Scientific Intelligence Specialist  
   The American University  

7. Problems in Developing Effective Interdisciplinary Teams in the Contemporary University  
   May 9, 1969—John H. Milsum  
   Social Sciences Division, The RAND Corporation  

8. The University’s Role in Implementing Social Cybernetics  
   May 22, 1969—Panel Discussion  
   Milton Marney (see 4. above);  
   John Ford (see 6. above);  
   Charles Williams  
   Office of Planning and Policy Studies  
   National Science Foundation  

The following GWU Faculty or Staff members participated in one or all of the seminars:  
David Abell  
Commission on Undergraduate Education in the  
Biological Sciences  
George R. Allen  
Department of Business Administration  
Richard C. Allen  
Law, Psychiatry and Criminology  
Don Allensworth  
Department of Political Science  
Robert E. Baker  
School of Education  
Stanley Baker  
Department of Biology
Arthur S. Banks
Department of Political Science

Ruth Bari
Department of Mathematics

Richard A. Barrett
Department of Business Administration

Guy Black
Program of Policy Studies (Economics)

Charles Bradley
Department of Economics

Harold F. Bright
Vice President for Academic Affairs

Ira H. Cisin
Director, Social Research Group

Raymond Cloutier
Department of Public Administration

Victor H. Cohn
Department of Pharmacology

Roy M. Coleman
Department of Psychiatry

George F. Conner
Department of Business Administration

Paul A. Crafton
Department of Engineering Administration

John T. Dailey
Education Research Project

Clarence H. Danhof
Program of Policy Studies (Economics)

Harold C. DeMoody
School of Engineering

James C. Dockeray
Dean, School of Government and Business Administration

Donald S. Douglas
Department of Biology

Marvin Eisenberg
School of Engineering and Applied Science

Richard F. Fowler
Rehabilitation Center

Frederick H. Gibbs
Health Care Administration

Samuel Gibson
Public Health Service

Leon Gintzig
Health Care Administration

John R. Glennie
Department of Business Administration

Harold P. Green
Law, Science and Technology

William Griffith
Department of Philosophy

Phillip Grub
Department of Business Administration

Andrew Gyorgy
Institute for Sino-Soviet Studies

Ira B. Hansen
Department of Biology

Dagmar Henney
Department of Mathematics

Clifford Ireland
Department of Statistics

Joe L. Jessup
Department of Business Administration

Robert S. Jordan
Department of Political Science

Norman Kaplan
Program of Policy Studies (Sociology)

L. William Katz
Health Care Administration

Irving Kayton
Computer-in-Law Institute

Stephen G. Kent
Department of Pathology

Arthur D. Kirsch
Department of Statistics

Jack L. Knetsch
Natural Resources Policy Center

Felix Kopstein
HumRRO

Robert Kramer
National Law Center

Dean of the Law School

Sar A. Levitan
Department of Economics

Kurt London
Institute for Sino-Soviet Studies

John D. Lyons
HumRRO

Eugene R. Magruder
College of General Studies

James E. Mahoney
Program of Policy Studies

Henry G. Manne
National Law Center

William H. Marlow
Navy Logistics Center

Martin A. Mason
School of Engineering and Applied Science

Louis H. Mayo
Vice President for Advanced Policy Studies; Director, Program of Policy Studies

William A. McClelland
HumRRO

Arnold C. Meltzer
School of Engineering and Applied Science

Jean Montgomery
Natural Resources Policy Center

James Mosel
Department of Psychology

Ellis Mottur
Program of Policy Studies

Ralph C. Nash
National Law Center

Benjamin Nimer
Department of Political Science

Henry R. Page
Department of Business Administration

Ewing L. Phillips
Department of Psychology; Psychological Clinic

Charles E. Pinkus
Department of Engineering Administration

Charles E. Rice
Department of Psychology

37
John R. Rizzo  
Behavioral Science

Daniel D. Roman  
Department of Management

Blake S. Root  
School of Education

Addison M. Rothrock  
School of Engineering and Applied Science

Joan Rubin  
Department of Anthropology

Peter Sawitz  
Department of Electrical Engineering

Richard H. Schlager  
Department of Philosophy

Robert J. Seidel  
HumRRO

Presson Shane  
Department of Engineering Administration

Charles W. Shilling  
Biological Sciences Communication Project

Daniel Sinick  
School of Education

Herbert E. Smith  
School of Engineering and Applied Science

Joseph B. Smith  
School of Engineering and Applied Science

Lowell C. Smith  
Department of Business and Public Administration

Robert G. Smith  
Program of Policy Studies

Henry Solomon  
Department of Economics

Carol R. St. Cyr  
School of Education

Edwin L. Stevens  
Department of Speech

Charles T. Stewart  
Department of Economics

Choy Tak Taam  
Department of Mathematics

Raymond E. Thomas  
Department of Statistics

Computer Center

Charles S. Tidball  
Department of Physiology

Frank H. Trinkl  
State and Local Finances Project

Joseph L. Tropea  
Department of Sociology

Carl Walther  
Assistant Vice President of Academic Affairs

Regis Walther  
Social Research Group

Reuben E. Wood  
Department of Chemistry
4. Seminar Series on
FEDERAL CONTRIBUTIONS TO MANAGEMENT
Series Director: David S. Brown
GWU Professor of Public Administration

Papers were presented as follows:

1. Integration and Systematization of Planning, Programming, and Budgeting
   April 18, 1968—Harry R. Page
   Associate Professor of Business Administration, GWU

2. Evolution of the Management Audit as a Means of Appraisal
   April 25, 1968—Cecil E. Goode
   Professorial Lecturer in Public Administration, GWU

3. Involving Clients and the Public in Federal Administration
   May 2, 1968—Manes Specter
   Member, Administrator's Advisory Council
   Veterans Administration

4. Communications and Federal Management: Some Current Highlights
   May 8, 1968—Fred R. Brown
   Adjunct Professor of Public Administration
   American University

5. Federal Experience with Productivity Measurement
   May 16, 1968—John W. Kendrick
   Professor of Economics, GWU

   May 22, 1968—George R. Allen
   Associate Professor of Business Administration, GWU

7. The Uses of Simulation in Management
   May 29, 1968—Stephen Chitwood
   Industrial College of the Armed Forces

8. Economics and Its Uses in Government
   June 6, 1968—Guy Black
   Associate Research Professor of Business Economics, GWU

9. Federal Contributions to Procurement Management
   June 13, 1968—Daniel D. Roman
   Professor of Management, GWU

10. Federal Contributions to the Improvement of Management in Private Enterprise
    November 25, 1968—Edwin Timbers
        Professor of Public Administration, and Director,
        Navy Graduate Financial Management Program, GWU

11. Federal Contributions to Operations Research
    December 5, 1968—John Coughlan
        Certified Public Accountant, Washington, D.C.

12. Federal Contributions to the Management of Records
    December 19, 1968—Chester Guthrie
        Acting Special Assistant for Research and Planning
        National Archives and Records Service
13. Federal Development and Application of Electronic Computers
January 9, 1969—Lowell H. Hattery
Professor of Management and Public Administration
The American University

January 16, 1969—Marvin M. Wolsey
Associate Professor of Management, GWU

Participants:
Herbert E. Angel
Deputy Archivist of the United States
National Archives and Records Service

Lloyd Bartholomew
Associate Professor of Health Care Administration, GWU

Don L. Bowen
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5. Workshop Conference on
THE URBAN CHALLENGE: THE MANAGEMENT AND INSTITUTIONAL RESPONSE
Airlie House, Warrenton, Va.

June 19-21, 1968
A Workshop co-sponsored by the Program of Policy Studies with
HUD Office of Business Participation
and Institute for Politics and Planning,
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1. **Assessment Information Systems**
   January 23, 1969—Clarence H. Danhof
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2. **Technology Assessment and the Congress**
   February 19, 1969—Richard A. Carpenter
   Senior Specialist in Science and Technology
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   Legislative Reference Service, Library of Congress

3. **The Adversary Process in Technology Assessment**
   March 19, 1969—Harold P. Green
   Professor of Law, and Director of Law, Science and Technology Program
   National Law Center, GWU

4. **The Management of Technology Assessment**
   April 23, 1969—Louis H. Mayo, Director of Series
   Vice President for Advanced Policy Studies
   Director, Program of Policy Studies
   Professor of Law
   National Law Center, GWU

5. **Technology Assessment in the Executive Office of the President**
   December 11, 1969—Charles V. Kidd
   Director, Council on Federal Relations
   The Association of American Universities

6. **The Social Function of Technology Assessment**
   January 22, 1970—Franklin P. Huddle
   Specialist in Science and Technology
   Science Policy Research Division
   Legislative Reference Service, Library of Congress

7. **The Process of Technology Assessment in the Food and Drug Administration**
   March 5, 1970—Alan Kaplan and Robert H. Becker
   Kleinfeld and Kaplan Law Offices

8. **Technology Assessment or Technology Harassment?**
   March 26, 1970—Leon Green, Jr.
   Director of Planning (Washington)
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9. **Processes of Technology Assessment: Telling It Like It Is—The National Transportation Safety Board**
   April 23, 1970—Ernest Weiss
   Executive Director, National Transportation Safety Board
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10. **Technology Assessment and Citizen Action**
    May 26, 1970—Ellis Mottur
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Professor Brown presented discussion papers for the first two seminars of this series as indicated below:

1. **Homesteading in the 70's**
   May 27, 1969

2. **The Influence of Modern Technology on Population Distribution**
   July 15, 1969

The seminars continued in the winter of 1969-70 as follows:

3. **Toward a More Balanced and Better Urban Government: An Agenda for Intergovernmental Action**
   September 16, 1969—James H. Pickford
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   Advisory Committee on Intergovernmental Relations

4. **Industrialization in Housing Construction**
   November 18, 1969—John P. Eberhard
   Dean, School of Architecture and Environmental Design
   State University of New York at Buffalo

5. **The Role of Construction Labor in an Era of Industrialized Housing**
   Housing Industry Consultant, Washington, D.C.

Participants:

Earl F. Bennett
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Architectural Sales
The Koppers Company, Inc.
Pittsburgh, Pa.

L. J. Bibri
Director of Employee Relations
Armstrong Cork Company

Lawrence Biekka
National Goals Research Staff
The White House

Roy Bivins
Coordinator for Interagency Programs
Office of Technology Utilization, NASA

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Manager
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General Electric Company
Louisville, Kentucky

John K. Bowersox
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Washington, D.C.

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Office of New Communities Development, HUD

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Coordinator
Urban Problems Seminar Series
Program of Policy Studies, GWU

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Special Assistant to Assistant Secretary for Metropolitan Development, HUD

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Office of Construction Service
U.S. Office of Education

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Washington, D.C.

Joseph M. Carlson
Technology Utilization Division, NASA

John Carver
Commissioner
Federal Power Commission

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President
Chase, Rosen & Wallace (Operations Research)
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Research Scientist
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National Lumber and Building Material Dealers Association

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Ben Evans
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Building Research Advisory Board
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Producers Advisory Committee (PAC)
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Washington, D.C.

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S. Ruttenberg & Associates
Washington, D.C.

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Land Sales
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Christopher Gebelein
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Family Housing Standards and Design
Office of the Secretary of Defense (I&L)
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Public Buildings Section
Portland Cement Association

David Glick
Counsel
Subcommittee on Housing
Committee on Banking and Currency
U.S. House of Representatives

Kingdon Gould, Esq.
Vice President
Parking Management, Inc.
Washington, D.C.

Harvey Hallenbeck, Jr.
Manager
Construction Affairs
Chamber of Commerce of the United States
Washington, D.C.

Irwin Halpern
Director
Policy Analysis Staff, NASA; and
National Goals Research Staff
The White House

Reese Hammond
Special Representative
International Union of Operating Engineers

Richard T. Hanna
U.S. House of Representatives (D-Calif.)

Joseph F. Hennessey
General Counsel
U.S. Atomic Energy Commission

Homer Hoyt
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Homer Hoyt Associates
(Consultants in Real Estate Economics)

Page Ingraham
Director
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Building and Construction Trades Department, AFL-CIO

James L. MacPherson
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Construction Industry Collective Bargaining Commission
Office of the Secretary
U.S. Department of Labor

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Professor of Law, GWU

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Robert Schmitt Homes  
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Chairman of the Board  
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Housing Technology Advisor, HUD

Malcolm Sherman  
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Henry M. Shine, Jr.  
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President’s Council on Youth Opportunity

William Shinnick  
Director  
NASA Technology Application Center  
University of New Mexico

Howard Shuman  
Administrative Assistant to Senator William Proxmire (D-Wisc.)

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Construction Statistics Division  
Bureau of the Census

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Observers from National Law Center, GWU:

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(Land Development Law Class)

J. McGurren  
J.D. Candidate  
(Land Development Law Class)

Brian Ospy  
J.D. Candidate  
(Land Development Law Class)

Barbara Wolitz  
Sociology Department

Raymond Wolitz  
LL.M. Candidate  
(Land Development Law Class)
9. Seminar Series on
THE SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY

Co-Chairmen: John Moeser
               Department of Political Science
and Vary Coates
               Research Scientist
               Program of Policy Studies, GWU

This series of three seminars for graduate students and faculty attempted to provide an interdisciplinary setting for discussion of the opportunities that science/public policy offers to students in the social sciences and humanities for graduate research and for future careers. Discussions were as follows:

1. Social Relevance of Science and Technology—An Overview
   February 27, 1970—Louis H. Mayo
   Vice President for Advanced Policy Studies
   Director, Program of Policy Studies, GWU
   and Guy Black
   Senior Staff Scientist
   Program of Policy Studies, GWU
   and John Logsdon
   Research Scientist
   Program of Policy Studies, GWU

2. The Moral Implications in Technological Development
   April 3, 1970—Victor Ferkiss
   Professor of Government
   Georgetown University

3. The Positive Attributes of Technology
   April 24, 1970—Group discussion to wind up series

Participants:
David Aaronson
Ph.D. Candidate in Economics

Ann Benfield
M.A. Candidate in Religion

Virginia Benson
Ph.D. Candidate in Economics

Dennis Brezina
Ph.D. Candidate in American Studies

Robert Brown
Ph.D. Candidate in Political Science

Tae Dong Chung
Ph.D. Candidate in Political Science

Vary T. Coates
Ph.D. Candidate in Political Science

Stanley Cohen
Ph.D. Candidate in Psychology

Bruce Dunning
M.A. Candidate in Sociology

Gene M. Griffith
M.A. Candidate in Philosophy

Robert Griggs
M.A. Candidate in Sociology

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Thelma Levine
Elton Professor of Philosophy, GWU
Donald Leith  
M.A. Candidate in Philosophy, GWU

Ilona Melstrads  
M.A. Candidate in Economics

Warren F. Morriss  
M.A. Candidate in Philosophy

James N. Mosel  
Professor of Psychology, GWU

Lorin P. Nielson  
M.A. Candidate in Philosophy

Benjamin Nimer  
Professor of Political Science, GWU

Richard Ostling  
M.A. Candidate in Religion

Howard Rees  
University Chaplain, GWU

Gordon Rocca  
Ph.D. Candidate in Political Science

Alex Rode  
Ph.D. Candidate in Psychology

Margaret Schafer  
Ph.D. Candidate in Psychology

Frank Segel  
Ph.D. Candidate in Economics

Neil Seldman  
Ph.D. Candidate in Political Science

Jeff Silver  
Undergraduate—Religion

Dwight Steussy  
Ph.D. Candidate in Economics

Joseph Tropea  
Assistant Professor of Sociology, GWU; Director Behavioral Systems Research Project

Paul Vernier  
M.A. Candidate in Philosophy

Evelyn Viehman  
Ph.D. Candidate in Psychology

Rabbi Samuel Volkman  
M.A. Candidate in Religion

Harry E. Yeide  
Associate Professor of Religion  
Assistant Dean of Columbian College of Arts and Sciences, GWU

Eileen Zeitz  
M.A. Candidate in Sociology
Papers were presented as follows:

1. Urban Development Modeling
   March 19, 1970—Professor George C. Hemmens
   Director, Urban Systems Program
   Department of City and Regional Planning
   University of North Carolina at Chapel Hill

2. Simulations in the Consolidation and Utilization of Knowledge about International Relations
   February 18, 1971—Dr. Harold Guetzkow
   Visiting Research Scholar
   Carnegie Endowment for International Peace, New York;
   Professor and Co-Director
   International Relations Program, Northwestern University;
   Adjunct Professor of International Relations, GWU

Participants:

Guy Black
Senior Staff Scientist, Program of Policy Studies;
Associate Professor of Business Economics, GWU

Robert M. Behr
Senior Staff Member
National Security Council
Executive Office of the President

Frank Bernheisel
Vice President
Ecosystems, Inc.

Robert Best
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Force Structure Department
Research Analysis Corporation

Paul Brace
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Henry Brady
Research Associate
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Glenn Bryan
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Department of the Navy

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Rex S. Garrett
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Urban Systems Development Corporation

James Gehrig
Staff Director
Senate Committee on Aeronautical and Space Sciences

John Gerba
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Dan Horowitz
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U.S. Department of State

Thomas L. Hughes
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Carnegie Endowment for International Peace

Les Janka
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School of Advanced International Studies
The Johns Hopkins University

Warren R. Johnston
Assistant Chief
Foreign Affairs Division
Congressional Research Service
Library of Congress

William B. Jones
Deputy Assistant Secretary
Bureau of Education and Cultural Affairs
U.S. Department of State

Murray Kamrass
Technical Staff
Institute for Defense Analyses; President-elect
Washington Operations Research Council

Paul L. Laase
Advisor
Department of International Trade
U.S. Department of State

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Staff
Office of Planning and Policy Studies, NSF

George H. Lawrence
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Arlington, Virginia

John M. Logsdon
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William Lucas
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Division of Social Sciences
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Joseph B. Margolin
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Louis H. Mayo
Director of the Program of Studies in Science and Technology; Professor of Law, GWU

Joseph A. Navarro
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Urban Mass Transportation Project (Science and Technology)

Benjamin Nimer
Professor of Political Science and International Affairs, GWU

William A. Niskanen
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Office of Management and Budget

Patrick O'Day
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Applied Simulations International, Inc.

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Office of the Secretary, DOT

Ernest Weiss
Executive Director
National Transportation Safety Board

Arthur Zachai
Graduate Research Assistant
School of Engineering and Applied Science, GWU
Papers were presented as follows:

1. **The United Nations’ Role in Outer Space**
   May 8, 1970—A. Abdel-Ghani
   United Nations Secretariat

2. **The Consortium as Model for Future International Cooperation in Space**
   June 22, 1970—Richard Mizrack
   Assistant to Director
   International Agreements Division
   COMSAT

3. **Prospects for International Participation in Post-Apollo Programs**
   August 6, 1970—Arnold Frutkin
   Assistant Administrator for International Affairs
   NASA

4. **International Space Cooperation in the Future: Problems and Prospects**
   September 29, 1970—Russell Drew
   Office of Science and Technology
   Executive Office of the President

**Participants:**

- **Abdul-Hamid Abdel-Ghani**
  Chief, Division of Outer Space Affairs
  UN Secretariat

- **Lt. Col. James A. Abrahamson, USAF**
  National Aeronautics and Space Council
  Executive Office of the President

- **Ward Allen**
  Deputy Assistant Secretary for International Organization Affairs
  U.S. Department of State

- **Walter Bailey**
  Assistant Executive Secretary
  Director of Earth Sciences
  National Academy of Sciences

- **Richard Barnes**
  Office of International Affairs, NASA

- **Col. Robert M. Behr, USAF**
  Senior Staff Member, National Security Council Staff

- **Dr. Clifford Bloch**
  Education and Human Resources
  Technological Assistance Bureau
  Agency for International Development

- **Donald Bowie**
  Office of Space and Environmental Science Affairs
  U.S. Department of State

- **Professor John W. Brewer**
  Department of Political Science, GWU

- **Richard Brown**
  Office of U.N. Political Affairs
  U.S. Department of State

- **Richard Campbell**
  Office of Space and Environmental Affairs
  U.S. Department of State

- **Nathaniel B. Cohen**
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  Office of Policy, NASA

- **William Cohen**
  Director, International Plans and Programs
  Office of International Affairs, NASA

- **Bert Cowlen**
  Institute for Public Administration

- **Paul Dembling**
  General Counsel
  General Accounting Office

- **Thomas E. Donahue, Jr.**
  Director
  International Agreements Division, COMSAT

- **Aldon Doud**
  Department of State

- **Stephen Doyle**
  Special Assistant to the Director
  Office of Telecommunications Policy
  Executive Office of the President

- **Dr. Russell Drew**
  Office of Science and Technology
  Executive Office of the President

- **Lester Fero**
  National Aeronautics and Space Council
  Executive Office of the President

- **Dr. Franco Emilio Fiorio**
  Scientific Counselor
  Embassy of Italy

- **William Fischer**
  Research Coordinator
  EROS Program
  U.S. Geological Survey

- **Arnold Frutkin**
  Assistant Administrator for International Affairs, NASA

- **Ellen Galloway**
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- **James J. Gehrig**
  Staff Director
  Senate Committee on Aeronautical and Space Science

- **William Gevarter**
  Office of Policy, NASA

- **Professor Harold Green**
  National Law Center, GWU

- **Professor Harold Guetzkow**
  (Northwestern University)
  c/o Carnegie Endowment for International Peace
Seminar Series on
TECHNOLOGY ASSESSMENT IMPLEMENTATION

Co-Chairmen: Ellis Mottur
Senior Staff Scientist
Program of Policy Studies
and Raphael Kasper
Research Scientist
Program of Policy Studies

1. The Use of Drugs to Control Hyperactivity in Grade School Children
   November 5, 1970—Panelists included:
   Charles R. Halpern
   Director
   Center for Law and Social Policy
   and Ellis R. Mottur (Moderator)
   Director
   Technology Assessment Implementation Project
   and Mark N. Ozer
   Associate Neurologist and Director
   Learning Research Unit
   Children's Hospital
   and Joseph L. Tropea
   Professor
   Sociology Department, GWU
   and Paul H. Wender
   Child Psychiatrist
   Laboratory of Psychology
   Division of Clinical Behavior Research
   National Institute of Mental Health

2. Problems of Implementing Technology Assessments: The Congressional Context
   Member of Congress

3. Aircraft Noise Abatement as a Case Study in the Implementation of Technology Assessment
   December 17, 1970—James R. Wright
   National Research Council
   National Academy of Sciences

4. Automotive Air Pollution and Problems of Implementation of Technology Assessment
   January 14, 1971—John C. Esposito
   Center for the Study of Responsive Law

5. Policy Alternatives for Environmental Management
   March 23, 1971—Robert U. Ayres
   Vice President
   International Research and Technology Corporation

6. Limitations on Implementation of Technology Assessment
   April 22, 1971—Professor Harold P. Green
   Director of Law, Science and Technology Program, GWU

7. The Role of the Legal System in Society's Implementation of Technology Assessment
   May 6, 1971—Professor Milton Katz
   Director of International Legal Studies
   Harvard University Law School

8. The Role of Citizen Action in the Implementation of Technology Assessment
   May 25, 1971—William Michael Kitzmiller
   Executive Director, Grassroots
Participants:
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Community and Regional Development Group
Chamber of Commerce of the United States

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Federal Communications Commission
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Lecturer
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Manager
Domestic Operations
Air Transport Association

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American Petroleum Institute

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The Council of State Governments

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National Science Foundation

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Lecturer
Harvard Business School

Roger G. Flynn
Manager
Domestic Operations
Air Transport Association

Peter N. Gammelgard
Senior Vice President
Public and Environmental Affairs
American Petroleum Institute
Harvey Lieber  
Academic Director  
Washington Semester Program  
American University

Ronald S. Lipman  
Psychopharmacology Research Branch  
John M. Logsdon  
Assistant Professor  
Political Science Department, GWU

Louis V. Lombardo  
American University  
William Lucas  
Executive Secretary to the Assistant Director for Research Applications  
National Science Foundation

James E. Mahoney  
Senior Scientist  
Program of Policy Studies in Science and Technology, GWU  (presently)  
Program Director  
President's Advisory Council for Management Improvement

Joseph B. Margolin  
Director  
Educational Policy Group  
Program of Policy Studies in Science and Technology, GWU

Louis H. Mayo  
Vice President for Policy Studies, GWU  
Dorn C. McGrath  
Chairman  
Department of Urban and Regional Planning, GWU

Mitchell Melich  
Solicitor  
Department of the Interior

James Michael  
Center for Study of Responsive Law

Marion Misch  
Research Scientist  
Educational Policy Group  
Program of Policy Studies in Science and Technology, GWU

James W. Moorman  
Senior Attorney  
Center for Law and Social Policy  
Charles A. Mosher  
Congressman

Laurence I. Moss  
Executive Secretary  
Committee on Public Engineering Policy  
National Academy of Engineering

Ellis R. Mottur  
Director  
Technology Assessment Implementation Project  
Program of Policy Studies in Science and Technology, GWU

Summer Myers  
Director  
Techno-Urban Studies  
Institute of Public Administration  
K. Guild Nichols, Jr.  
Staff Consultant  
Committee on Science and Aeronautics  
U.S. House of Representatives

Clarence C. Ohlke  
Director  
Office of Government and Public Programs  
National Science Foundation

Mark N. Ozer  
Associate Neurologist and Director  
Learning Research Unit  
Children's Hospital  
Frank M. Potter, Jr.  
Environmental Clearinghouse

Drucilla Ramey  
Stern Community Law Firm

Glenda Reed  
Legislative Assistant to Congressman John W. Davis  
Arnold W. Reitz, Jr.  
Director  
Environmental Law Program, GWU

Bob Richard  
Administrative Assistant to Congressman John W. Davis  
Philip C. Ritterbush  
Chairman  
Organization Response  
Leonard Rodberg  
Resident Fellow  
Institute for Policy Studies

Jill Schucker  
Assistant to Congressman Michael J. Harrington  
Charles S. Sheldon, III  
Chief  
Science Policy Research Division  
Legislative Reference Service  
Library of Congress

William C. Simons  
President  
District of Columbia Teachers' Union

Daniel Singer  
Attorney at Law  
Strasser, Spiegelberg, Field, Frank and Kimpelman

Joel A. Snow  
Deputy Assistant Director for Research Applications  
National Science Foundation

Charles W. T. Stephenson  
Deputy Assistant General Counsel  
Bureau of East Asia  
Agency for International Development  
Department of State

Joseph W. Stickle  
National Aeronautics and Space Council  
Executive Office of the President

Jeremy J. Stone  
Director  
Federation of American Scientists

Gabor Strasser  
Technical Assistant  
Office of Science and Technology

Edward D. Studholme  
Research Associate  
Department of Urban and Regional Planning, GWU

Bruce J. Terris  
Senior Attorney  
Center for Law and Social Policy

Joseph L. Tropea  
Assistant Professor  
Department of Sociology, GWU

Terry A. Trumbull  
Institute of Public Administration

E. Winslow Turner  
General Counsel  
Subcommittee on Intergovernmental Relations  
Committee on Government Operations  
U.S. Senate

Franklin Wallick  
Editor  
Washington Report  
United Auto Workers  
J. Frederick Weinhold  
Office of Science and Technology  
Executive Office of the President
### Seminar on OPTIMUM POPULATION
December 2, 1970

**Speaker:** Honorable S. Fred Singer  
Deputy Assistant Secretary for Scientific Programs  
U.S. Department of the Interior

**Participants:**
- Raymond L. Bisplinghoff  
  Deputy Director  
  National Science Foundation
- Henry E. Brady  
  Research Assistant  
  Program of Policy Studies, GWU
- Jack M. Carlson  
  Assistant to the Deputy Director  
  Office of Management and Budget
- Vary T. Coates  
  Research Scientist  
  Program of Policy Studies, GWU
- Carol Crawford  
  Legislative Assistant  
  Office of Senator Bob Packwood (R-Ore.)
- Jerry W. Combs  
  Behavioral Sciences Branch  
  Center for Population Research  
  National Institute of Child Health and Human Development
- Carol T. Foreman  
  Chief Information Liaison  
  Center for Family Planning Program Development  
  Planned Parenthood—World Population
- David L. Gamon  
  Deputy Special Assistant to the Secretary for Population Matters  
  U.S. Department of State
- Alvaro Garcia-Pena  
  Vice President  
  Population Reference Bureau
- Louis M. Hellman  
  Deputy Assistant Secretary for Population Affairs  
  Department of Health, Education, and Welfare
- Hendrik S. Houthakker  
  Member  
  President's Council of Economic Advisers
- Phineas Indritz  
  Chief Counsel  
  Subcommittee on Conservation and Natural Resources  
  U.S. House of Representatives
- Robert W. Lamson  
  Staff Associate  
  Office of Planning and Policy Studies  
  National Science Foundation
- Hans Landsberg  
  Director  
  Appraisal Program  
  Resources for the Future, Inc.
- Congressman Paul N. McCloskey  
  (R-Calif.)
- Louis H. Mayo  
  Vice President for Policy Studies and Special Projects;  
  Director  
  Program of Policy Studies in Science and Technology, GWU
- Arthur S. Miller  
  Professor of Law, GWU

- Mary Mogee  
  Graduate Research Assistant  
  International Studies Group  
  Program of Policy Studies in Science and Technology, GWU
- Congressman Charles A. Mosher  
  (R-Ohio)
- Ellis Mottur  
  Director  
  Technology Assessment Implementation Project  
  Program of Policy Studies in Science and Technology, GWU
- Keir Nash  
  Senior Political Scientist  
  President's Commission on Population Growth and the American Future
- Robert Park, Jr.  
  Deputy Director  
  President's Commission on Population Growth and the American Future
- Robert C. Richardson  
  Senior Associate  
  Schreier & McKee Associates  
  Arlington, Va.
- Robert Ridker  
  Director  
  Population Studies Program  
  Resources for the Future, Inc.
- James A. Rose, Jr.  
  Consultant  
  Westinghouse Learning Corporation  
  Bladensburg, Md.
- Douglas Ross  
  Legislative Assistant  
  Office of Senator Joseph D. Tydings (D-Md.)
- Jean Ruffin  
  Research Scientist  
  Program of Policy Studies, GWU
- Richard Schisler  
  Special Assistant to Senator-elect Robert Taft (R-Ohio)
- S. Fred Singer  
  Deputy Assistant Secretary for Scientific Programs  
  U.S. Department of the Interior
- Senator Joseph D. Tydings  
  (D-Md.)
- Walter N. Walmsley  
  Consultant  
  Population Crisis Committee
- Quentin M. West  
  Administrator  
  Foreign Economic Development Service  
  U.S. Department of Agriculture
- Charles F. Westoff  
  Executive Director  
  President's Commission on Population Growth and the American Future
- Gooloo Wunderlich  
  Demographer  
  Office of Population Affairs  
  Department of Health, Education, and Welfare
Seminar on
REGAINING THE POLICY INITIATIVE IN THE MODERN UNIVERSITY
December 16, 1971
Speaker: Philip C. Ritterbush
Chairman
Organization: Response

Participants:
Guy Black
Senior Staff Scientist
Program of Policy Studies;
Associate Professor of Business Economics, GWU
Robert A. Brooks
Deputy Under Secretary
The Smithsonian Institution
John J. Corson
Chairman
Fry Consultants, Inc.
Richard W. C. Falknor
Special Assistant to Congressman Thomas Foley (D-Wash.)
Hendrik Gideonse
Subcommittee on Executive Reorganization and
Government Research
Senate Committee on Government Operations
Martin A. Kramer
Director
Higher Education Planning
Office of the Assistant Secretary for Planning and Evaluation
Department of Health, Education, and Welfare
Louis H. Mayo
Vice President for Policy Studies;
Director
Program of Policy Studies;
Professor of Law, GWU
Harold Orlans
Senior Fellow
The Brookings Institution
David E. Ryer
Special Assistant to the Director
National Science Foundation
Philip Scribner
Assistant Professor
Philosophy and Religion
American University
Ralph Widner
Director
Center for the Study of Contemporary Issues
Ohio State University
Douglas Trout
President
Douglas Trout Associates
15. Seminar Series on TECHNOLOGY ASSESSMENT METHODOLOGY

Papers were presented as follows:

1. **Generating Social Impact Scenarios, A Key Step in Making Technology Assessment Studies**

   January 20, 1972—Martin V. Jones
   The MITRE Corporation

2. **Design Evaluation in Technology Assessment Illustrated by Auditory Impedance and Sound Distribution Problems**

   March 9, 1972—John F. Halldane
   Environmental Systems Consultant
   Derwood, Md.

3. **Planning and Programming in the Soil Conservation Service**

   May 18, 1972—Roy M. Gray
   Program Planning Division
   Soil Conservation Service
   U.S. Department of Agriculture

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**Participants:**

- **Betsy Amin-Arsala**
  Research Associate
  Program of Policy Studies, GWU

- **James R. Balsley**
  Assistant Director for Research
  U.S. Geological Survey

- **Terry Barnett**
  Legislative Assistant
  Office of Senator Charles Mathias

- **Stanley Berman**
  Budget Examiner
  Natural Resources Division
  Office of Management and Budget

- **Clifford Berg**
  Management Analyst
  Office of Management and Budget
  Executive Office of the President

- **Guy Black**
  Senior Staff Scientist
  Program of Policy Studies, GWU

- **Clark Blake**
  Staff Geologist
  U.S. Geological Survey

- **Bruce Blanchard**
  Director
  Office of Environmental Project Review
  U.S. Department of the Interior

- **John E. Blodgett**
  Analyst
  Environmental Policy Division
  Congressional Research Service
  Library of Congress

- **James M. Brown**
  National Law Center, GWU

- **Harold Bullis**
  Research Analyst
  Science Policy Research Division
  Congressional Research Service
  Library of Congress

- **Joseph M. Carlson**
  Chief
  Dissemination and Program Evaluation Division, NASA Hqts.

- **Rosemary Chalk**
  Research Assistant in Science and Technology
  Congressional Reference Service
  Library of Congress

- **Vary T. Coates**
  Research Scientist
  Program of Policy Studies, GWU

- **Edward Cornish**
  President
  The World Future Society

- **Elizabeth Cuadra**
  Deputy for Program Development
  Office of Noise Abatement and Control
  U.S. Environmental Protection Agency

- **Lawrence F. Cunningham**
  Strategic Planner
  Office of Systems Analysis and Information
  U.S. Department of Transportation

- **Harold F. Davidson**
  Physical Scientist
  Office of Chief of Research and Development
  U.S. Department of the Army

- **William A. Drevo, A.I.A.**
  Planning Consultant

- **Steven Ebbin**
  Senior Staff Scientist
  Program of Policy Studies, GWU

- **Nancy Ebersole**
  Program Analyst
  Office of Systems Analysis and Information
  U.S. Department of Transportation

- **Jack Ebetino**
  Program Analyst
  Office of Planning and Analysis
  U.S. Atomic Energy Commission
Terry Elkins
Office of Noise Abatement and Control
Environmental Protection Agency

William A. Fischer
Research Associate
Program of Policy Studies, GWU

G. L. Fisher
Program Analyst
Analysis and Evaluation Branch
Office of the Associate Director for Planning and Evaluation
National Institutes of Health
Department of Health, Education, and Welfare

Daniel Flynn
Chief
Applied Acoustics and Illumination Section
Sensory Environment Branch
Building Research Division
National Bureau of Standards
U.S. Department of Commerce

Bill Goldbeck
Special Assistant to the Assistant Secretary for
Research and Technology
Department of Housing and Urban Development

James G. Gross
Program Manager
Office of Advanced Ship Development
Maritime Administration
U.S. Department of Commerce

Roy M. Gray
Program Analyst
Program Planning Division
Soil Conservation Service
U.S. Department of Agriculture

John F. Haldane
Environmental Systems Consultant
Dianwood, Md.

Walter A. Hahn
Senior Specialist in Science and Technology
Congressional Research Service
Library of Congress

Frank Hansing
Director
Office of University Affairs, NASA

Guenther Hintze
School of Engineering and Applied Science, GWU

Phineas Indritz
Chief Counsel
Subcommittee on Conservation and Natural Resources
House Committee on Government Operations

Martin V. Jones
Staff
The MITRE Corporation
McLean, Va.

Raphael G. Kasper
Research Scientist
Program of Policy Studies, GWU

Thomas J. Kennedy, Jr.
Associate Director for Program Planning and Evaluation
National Institutes of Health

David M. Kieler
Senior Editor
Chemical & Engineering News

Robert W. Lamson
Staff Associate
Science Policy Research Section
National Science Foundation

Leonard Lederman
Deputy Director
Office of Exploratory Research and Problem Assessment
National Science Foundation

Howard J. Lewis
Director
Office of Information
National Academy of Sciences

Joseph B. Margolin
Senior Staff Scientist and Director
Educational Policy Group
Program of Policy Studies, GWU

Milton Marney
Research Associate
Lambda Corporation
Arlington, Va.

David F. Mayo
GWU

Louis H. Mayo
Vice President
Program of Policy Studies and Special Projects;
Director
Program of Policy Studies;
Professor of Law, GWU

Stedman Noble
Mathematical Economist
International Research and Technology Corporation

Paul N. Romani
Research Associate
Program of Policy Studies, GWU

Glenn Schweitzer
Director
Office of Science and Technology, AID
U.S. Department of State

Cora M. Siddayao
Research Associate
Program of Policy Studies, GWU

Alan R. Siegel
Director
Environmental Factors and Public Utilities Division
Office of the Assistant Secretary for
Research and Technology
Department of Housing and Urban Development

Murray Turoff
Operations Research Analyst
Office of Information and Analysis, OEP
Executive Office of the President

Kenneth Webb
Senior Researcher
The Urban Institute

John J. Zimmerman
Research Assistant
Program of Policy Studies, GWU
Seminar on

INFLUENCE OF 'SCIENTIFIC' DATA ON DECISIONAL BEHAVIOR IN CONTEXTS REQUIRING THE EVALUATION OF THE SOCIAL COSTS OF ENVIRONMENTAL NOISE INTRUSION

April 2, 1972

Speaker: Louis H. Mayo

Participants:

Louis H. Mayo
Vice President for Policy Studies and Special Projects; Professor of Law; Director Program of Policy Studies, GWU

James M. Brown
Professor of Law
National Law Center, GWU

Herbert N. Cantor
Project Director
Public Technology, Inc.

Richard L. Chapman
Professor of Law
Program of Policy Studies, GWU

Tod Anuskiewicz
Vice President
Biological Sciences Communication Project, GWU

Vary T. Coates
Professor of Law
Program of Policy Studies, GWU

Elizabeth Cuadra
Deputy for Program Development
Office of Noise Abatement and Control
Environmental Protection Agency

Susan Doscher
Director
Intergovernmental Science and Technology Program
Science Policy Research Division
Library of Congress

Bill Goldbeck
Director
Office of Noise Abatement and Urban Development

M. Frank Hersman
Professor of Law
Program of Policy Studies, GWU

John D. Holmfield
Professor of Law
Program of Policy Studies, GWU

Alfred A. Perry
Director
Urban Management Systems
President’s Advisory Council on Management Improvement
Office of Management and Budget

Peter W. Powell
Legislative Counsel
Senate Commerce Committee
U.S. Congress

John O. Powers
Chief Environmental Scientist
Office of Environmental Quality
Federal Aviation Agency

Howard C. Reese
Professor of Law
Program of Policy Studies, GWU

Arnold W. Reitze
Director
Environmental Law Program, GWU

Clark Sessions
Director
Intergovernmental Science and Technology Program
Science Policy Research Division
Library of Congress

Bill Goldbeck
Director
Office of Noise Abatement and Urban Development

M. Frank Hersman
Professor of Law
Program of Policy Studies, GWU

John D. Holmfield
Professor of Law
Program of Policy Studies, GWU

Cora Siddayao
Professor of Law
Program of Policy Studies, GWU

Alan R. Siegel
Director
Environmental Law Program, GWU

John J. Zimmerman
Program of Policy Studies, GWU
17. JOINT SYMPOSIUM ON TECHNOLOGY ASSESSMENT: A FUTURE ORIENTED POLICY TOOL

June 5, 1972

Co-sponsored by the Program of Policy Studies with The Institute of Management Sciences, and The World Future Society

Symposium Coordinator: Vary T. Coates

Symposium Committee Co-Chairmen:
WFS Joseph Coates, National Science Foundation
TIMS Kenneth Gordon, Resource Management Corporation
PPSST Raphael Kasper

Speakers:

**Perspectives on Technology Assessment: What it is and Why it is Important**

Professor Edward Wenk
University of Washington, Seattle
(formerly Chief of Science Policy Research Division
Congressional Research Service)

**Institutional Arrangements for Technology Assessment**

- **Survey of Government Experience**
  Vary T. Coates
  Program of Policy Studies, GWU
- **The Business Point of View**
  Carl Madden
  Chief Economist
  U.S. Chamber of Commerce
- **Congressional Actions**
  Walter Hahn
  Science Policy Research Division
  Library of Congress
- **Environmental Impact Statements**
  David Aggerhold
  U.S. Army Corps of Engineers

**The Lawyer’s Interface with Expanding Technology**

Professor Harold Green
National Law Center, GWU

**Methodology for Technology Assessment—Two Views**

Selwyn Enzer
Institute for the Future; and
James Balsley
U.S. Geological Survey

**Recent Exemplary Assessments:**

- **Violence on TV**
  George Comstock
  RAND Corporation
  (formerly with the Surgeon General’s Scientific Advisory Committee)
- **Alternatives to the Internal Combustion Engine**
  Douglas Harvey
  Hittman Associates
- **Expansion of Kennedy Airport**
  Steven Ebbin
  Program of Policy Studies, GWU

**An Exercise in Technology Assessment: A Workshop**

participation under direction of Joseph Coates
National Science Foundation
Papers were presented as follows:

1. **Current U.S. Policy for Science and Technology**  
   September 26, 1972—Edward David  
   Science Adviser to the President

2. **U.S. Technological Strategy: Alternatives for the 1970's**  
   November 2, 1972—J. Herbert Hollomon  
   Director  
   Center for Policy Alternatives  
   Massachusetts Institute of Technology

3. **Science Policy in an Era of Technological Strategy**  
   December 7, 1972—Philip Handler  
   President  
   National Academy of Sciences

4. **Public Technology: Promise and Problems**  
   January 15, 1973—John Mock  
   Science Adviser to the Governor of Georgia

5. **Federal Support of Civilian Technology: Theory versus Practice**  
   February 22, 1973—George Eads  
   Department of Economics, GWU

   March 28, 1973—Michael Boretsky  
   Senior Policy Analyst  
   Department of Commerce

7. **The Federal Government and Social Research and Development**  
   April 26, 1973—Roger Levien  
   Director  
   Washington Domestic Programs  
   The RAND Corporation

**Seminar Participants:**

- **David Beckler**  
  Assistant to the Director  
  Office of Science and Technology

- **Johan Benson**  
  American Institute of Aeronautics and Astronautics

- **Helen Berkowitz**  
  School of Public and International Affairs, GWU

- **Guy Black**  
  Program of Policy Studies in Science and Technology, GWU

- **William Boesman**  
  Science Policy Research Division  
  Library of Congress

- **Ihor Bohachevsky**  
  Bell Labs

- **Michael Boretsky**  
  Senior Policy Analyst  
  U.S. Department of Commerce

- **Carroll Brickenkamp**  
  Office of Programs  
  National Bureau of Standards

- **Edward Allen**  
  Deputy Assistant Secretary for International Economic Research  
  Department of Commerce

- **Frederick Anderson**  
  Editor-in-Chief  
  Environmental Law Reporter

- **Kathryn Arnow**  
  Science Resources Studies  
  National Science Foundation

- **Peter Bankson**  
  Graduate Student, GWU

- **Claude Barfield**  
  National Journal

- **James Barry**  
  Graduate Student, GWU

- **Michael Bass**  
  Graduate Student, GWU

- **Miriam Bazelon**  
  Graduate Student, GWU

- **Claude Barfield**  
  National Journal

- **James Barry**  
  Graduate Student, GWU

- **Michael Bass**  
  Graduate Student, GWU

- **Miriam Bazelon**  
  Graduate Student, GWU
Guyford Stever  
Director  
National Science Foundation

Charles Stewart  
Department of Economics, GWU

Jeremy J. Stone  
Director  
Federation of American Scientists

Ted Suranyi-Unger  
Department of Economics, GWU

Albert Teich  
Policy Institute  
Syracuse University Research Corporation

Wesley Tennant  
Program of Policy Studies in Science and Technology, GWU

Michael Terpak  
Voice of America  
United States Information Agency

Terrance Troy  
Experimental Technology Incentives Program  
National Bureau of Standards

Mark Tucker  
R&D System Task Force  
National Institute of Education

Thomas Ubois  
National R&D Assessment Program  
National Science Foundation

David Wald  
Graduate Student, GWU

Raymond J. Waldmann  
Staff Assistant to the President  
Domestic Council

June Wing  
Graduate Student, GWU

Linda Yelton  
Program of Policy Studies and Technology, GWU

James Zwolenik  
Science Resource Studies  
National Science Foundation
19. Seminar Series on TECHNOLOGY AND PUBLIC POLICY
Coordinator: Vary T. Coates

Papers were presented as follows:

1. Technology and Public Policy: Highlights of the Report
   November 29, 1972—Vary T. Coates
   Senior Staff Scientist
   Program of Policy Studies, GWU

   Reply to remarks: Jerry D. Ward
   Director
   Office of R&D Policy
   Systems Development and Technology
   Department of Transportation

2. Technology Assessment in Transportation
   January 18, 1973—Joseph Coates
   Program Manager
   Office of Exploratory Research and Problem Assessment
   National Science Foundation

   and Steven Maimon
   Technical Planner
   Office of Technical Planning and Financial Analysis
   U.S. Post Office Department

3. Toward a National Energy Policy
   February 27, 1973—Monte Canfield
   Deputy Director
   Ford Foundation Energy Policy Project

Participants:

James Akin
Director
Office of Fuels and Energy
U.S. Department of State

Betsy Amin-Arsala
Research Associate
Program of Policy Studies, GWU

Robert Anthony
Science Liaison
Bendix Aerospace Division

Holt Ashley
Director
Office of Exploratory Research and Problem Assessment
National Science Foundation

Richard Baker
Advanced Material Concepts Agency
U.S. Department of Defense

Arthur J. Balek
Community Effects Staff
Office of Program and Policy Planning
Federal Highway Administration
U.S. Department of Transportation

Gerald O. Barney
Staff Member
Council on Environmental Quality

Bodo Bartocha
Office of National and International Programs
National Science Foundation

Douglas C. Bauer
White House Fellow
Special Assistant to Secretary of Transportation Volpe

David Beckler
Executive Assistant to the Director of Science and Technology
Executive Office of the President

James M. Beggs
Under Secretary of Transportation
U.S. Department of Transportation

Charles M. Billingsley
Program Analysis and Control
Office of Research and Development
Federal Highway Administration

Guy Black
Senior Staff Scientist, Program of Policy Studies, GWU

Fred Bowen
Executive Assistant to Deputy Associate Administrator, A.S.T.
NASA

Steven Carhart
Ford Foundation Energy Policy Project

John Carrell
Office of Environmental Review
U.S. Department of the Interior

Robert J. Catlin
Division of Environmental Affairs
Atomic Energy Commission

Hang-Sheng Cheng
International Economist
U.S. Department of the Treasury
George Cherry  
Deputy Associate Administrator, A.S.T.  
NASA

Joseph F. Coates  
Program Manager  
Exploratory Research and Problem Assessment  
National Science Foundation

Vary T. Coates  
Research Scientist  
Program of Policy Studies, GWU

Harry I. Cohen  
 Plans Evaluation Division  
U.S. Coast Guard  
U.S. Department of Transportation

Ernest L. Corley  
 Program Analysis and Coordination  
U.S. Department of Agriculture

Henry Coulter  
 Geological Survey  
U.S. Department of the Interior

Fred Culter  
National Economist  
U.S. Department of the Treasury

Beatrice Dane  
Consumer Affairs and Public Information  
National Highway Traffic Safety Administration

Diane D. Davenny  
Science and Technical Adviser  
Office of Congressman Brock Adams

Velmar Davis  
Assistant to Administrator for Environmental Coordination  
Economics Research Service  
U.S. Department of Agriculture

Paul Dembling  
General Counsel  
General Accounting Office

Harry H. Hersey  
Assistant Program Officer for Research and Development  
Federal Highway Administration  
U.S. Department of Transportation

Frank Hersman  
Office of Intergovernmental Science Utilization  
Research Applied to National Needs Program  
National Science Foundation

Lloyd O. Herwig  
Ford Foundation Energy Policy Project

Roy Jackson  
Associate Administrator, A.S.T.  
NASA

Paul Jaffe  
Office of Safety and Consumer Affairs  
U.S. Department of Transportation

James R. Janis  
Office of Planning and Evaluation  
Environmental Protection Agency

Philip Johnson  
Environmental Systems Division  
National Science Foundation

Thomas J. Joyce  
Bureau of Natural Gas  
Federal Power Commission

Raphael Kasper  
Research Scientist  
Program of Policy Studies, GWU

Jean Kneezo  
Analytist in Science and Technology  
Congressional Research Service  
Library of Congress

James H. Krieger  
Chemical and Engineering News

Eugene Lehr  
Coordination and Research Division  
U.S. Department of Transportation
Joseph Leiberman
Congressional Research Service
Library of Congress

James D. Leonard
Emergency Planning Office
Federal Highway Administration
U.S. Department of Transportation

Steven Levinson
Assistant Science Advisor
Office of Assistant Secretary for Health
U.S. Department of Health, Education, and Welfare

Al Linhares
Chief
Research and Development Policy and Analysis
Office of Research and Development
U.S. Department of Transportation

Henry Lippick
Senate Commerce Committee

Hugh Loweth
Economics, Science and Technology Division
Office of Management and Budget
Executive Office of the President

Steven Mainom
Office of Technical Planning and Financial Analysis
U.S. Post Office Department

Milton Marney
Senior Research Fellow
Program of Policy Studies, GWU

Roy L. Marx
Research Scientist
Program of Policy Studies, GWU

Louis H. Mayo
Vice President for Policy Studies and Special Projects; Director
Program of Policy Studies, GWU

Lawson M. McKenzie
Office of University Research
U.S. Department of Transportation

Kenneth McLennan
Deputy Assistant Secretary
U.S. Department of Labor

Pat McWethy
Office of National R&D Assessment
National Science Foundation

T. W. Mermel
Assistant to Commissioner for Scientific Affairs
Bureau of Reclamation
U.S. Department of the Interior

Stanley Miller
American Committee for Flags of Necessity

Ellis Mottur
Science Advisor to Senator Edward M. Kennedy

Sumner Myers
Director of Urban Systems Studies
Institute of Public Administration

Lindsay Norman
New Minerals Technology
Office of the Science Advisor
U.S. Department of the Interior

John K. Parker
Office of Planning and Management
Government of the District of Columbia

T. A. Phillips
Chief
Bureau of Power
Federal Power Commission

Stanley P. E. Price
Director
Systems Analysis and Evaluation Division
U.S. Department of Transportation

Martin Prochnik
Deputy Science Advisor
U.S. Department of the Interior

William Radlinski
Associate Director
Office of Coal Research
U.S. Department of the Interior

Tom Ratchford
House Committee on Science and Astronautics

Howard C. Reese
Program of Policy Studies, GWU

Lawrence C. Regan
Chief
Program Review Division
Office of Policy and Plans
Federal Railroad Administration

Harold H. Reuben
Deputy Director
General Accounting Office

Robert Ritzmann
Special Assistant for Industrial Participation
Atomic Energy Commission

Robert Rollins
Advanced Concepts and Missions, A.S.T.
NASA

Edward Ruddy
Shipbuilders Council of America

A. T. Samuelson
Assistant Comptroller General
General Accounting Office

Maxine Savitz
Division of Advanced Technology Assessment
National Science Foundation

Anton B. Schmalz
Vice President
New World Systems, Inc.

Louis J. Schoen
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American Petroleum Institute

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Dale Zimmerman  
Leasing Branch  
Bureau of Land Management  
U.S. Department of the Interior

Dan Zwick  
Office of the Assistant Secretary for Health  
U.S. Department of Health, Education, and Welfare
20. Fellowship Program Seminars on
ISSUES AND CONCERNS IN CAREER EDUCATION
Series Coordinator: Ann B. Finkelstein

Papers were presented as follows:

1. Career Education and Minority Groups
   a) February 8, 1973—Rhody McCoy (Speaker)
      Director
      Center for the Study of Educational Innovations
      University of Massachusetts
      Rudolph Bryant (Fellow)
      Assistant Director
      Pratt Institute Center for Community and Environmental Development
   b) March 8, 1973—Rudolph Bryant (Speaker)
      Assistant Director
      Pratt Institute Center for Community and Environmental Development
      Fellow in "Issues and Concerns in Career Education"

2. Career Education and Employers
   a) March 19, 1973—Charles Bowen (Speaker)
      Chairman of the National Committee for Support of Public Schools
   b) April 19, 1973—Ron Hicks (Speaker)
      Staff Assistant
      Urban Affairs Department
      Dallas Chamber of Commerce
      Fellow in "Issues and Concerns in Career Education"

3. Career Education and Labor Unions
   a) April 30, 1973—Gus Tyler (Speaker)
      Assistant President
      International Ladies Garment Workers Union
      Albert Lorente (Fellow)
      United Automobile Workers of America
   b) May 30, 1973—Albert Lorente (Speaker)
      Administrative Coordinator of Project Outreach
      United Automobile Workers of America
      Fellow in "Issues and Concerns in Career Education"

4. Career Education and Higher Education
   June 21, 1973—Panelists:
      Stephen Bailey
      Vice President
      American Council on Education
      David Bushnell
      Human Resources Research Organization
      Stephen Plumer
      Dean of Developing Programs
      Antioch College

Participants:
Sheppie Abramowitz
Director
Washington Office
University of Cincinnati

Delbert Allen
Business Manager
Local 77
International Union of Operating Engineers

George Arnstein
The Brookings Institution

Sherri Arnstein
A. D. Little, Inc.

Helen S. Astin
Director of Research
University Research Corporation
Donald Barnes  
Vice President  
Institute for Educational Development

Mary Bigley  
Federal Relations Desk  
American Association of State Colleges and Universities

Alvah Berman  
Assistant Dean for Cooperative Education  
Northeastern University

Charles Bowen  
Chairman  
National Committee for Support of the Public Schools

Jacqueline Brophy  
Acting Director  
Labor Program Service  
School of Labor and Industrial Relations  
Michigan State University

Jonathan Brown  
Institute for Educational Leadership, GWU

Dave Bushnell  
Human Resources Research Organization

Dale Bussis  
Vice President  
Institute for Educational Development

Paul Cawein  
Assistant Superintendent  
Career Development Programs  
District of Columbia

Tory Cawnes  
Research Assistant  
National Institute of Education

James Cesnik  
Editorial Guild Reporter; Director  
American Newspaper Guild

Michael Collins  
Director  
Dual Enrollment Program  
International Union of Operating Engineers

Paul Collins  
American Personnel and Guidance Association

Lloyd Cooke  
Director  
Urban Affairs  
Union Carbide Corporation

Martin Cooley  
Program Executive for Education  
National Association of Manufacturers

Olga Corey  
Director  
State of Illinois Washington Office

Kathryn Crockett  
GWU

Ruth Day  
National Office Training Branch  
Internal Revenue Service

William Douglas  
Director of Education  
American Institute for Free Labor Development

John Egermeier  
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National Institute of Education

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Brady Fletcher  
Counselor  
Kenmore Junior High School

Delyte Frost  
Communication Workers of America

Dennis Gallagher  
The Manpower Institute

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National Assessment Project  
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Office of Education  
U.S. Department of Health, Education, and Welfare

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Job Orientation and Training  
Chrysler Corporation

Helmut Golatz  
Head  
Department of Labor Studies  
Pennsylvania State University

Thomas Golatz  
Social and Rehabilitation Service  
U.S. Department of Health, Education, and Welfare

Harold Goldstein  
The Manpower Institute

Margaret Gover  
Americans for Indian Opportunity, Inc.

Nancy Graham  
The National Urban Coalition

Richard A. Graham  
Former Director  
Education Programs  
ACTION

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Chairman  
Committee on School and Work  
American Federation of Teachers

Martin Hamburger  
Dean  
New York University

Reese Hammond  
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International Union of Operating Engineers

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LaDonna Harris  
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Americans for Indian Opportunity, Inc.

William Harrison  
Center for the Study of Social Problems  
Battelle Memorial Institute
Lucinda Haynes
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American Assembly of Collegiate Schools of Business

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Program Publications

The publications listed herein have grown out of the Program's research from the Fall of 1966 through October 1973. The Program publishes four groups of documents: Monographs (Mon), Occasional Papers (OP), Reprints (R), and Staff Discussion Papers (SDP). Staff Discussion Papers fall in four series:

100 series—Urban
200 series—Technology Assessment
300 series—Economic Aspects of R&D
400 series—Institutional Responses to Advancing Technology

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Program Series papers (except Reprints which may only be ordered from Mrs. Steiner) may be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22151 (microfiche—$1.45, paper copies—$3.00 or as listed) stating title, author and PB or N number of the document requested. All orders should be sent to NTIS accompanied by payment in the form of a check, money order or NTIS coupon.

Advocacy in Technology Assessment.
Ernest M. Jones. (Nov. 70) GWPS-SDP 209; 80 pp.
PB 196-635.

Apollo Decision and Its Lessons for Policy Makers.
John M. LOGSDON. (Jan. 70) GWPS-OP 7; 80 pp.
N70-23324.

Broadcast Satellites: Their Potential Use for Educational Purposes, and their Relationship to International Understanding and Cooperation.
John HANESSIAN, Jr. and Joseph B. MARGOLIN (July 69) 21 pp.
GWPS-OP 3; PB 192-549.

“Business Gigantism and ‘Technological Imperatives'”

Congressional Debate on the Social Sciences.
Dennis W. BREZINA. (Dec. 68) GWPS-SDP 400; 22 pp.
PB 192-556.

*Consideration of Environmental Noise Effects in Transportation Planning by Governmental Entities.
N73-72515.
(Revision of remarks prepared for TRANSPO '72 International Conference on Transportation and the Environment, Session #7 on "Noise as a National Problem" held 5/31/72, Wash. D. C.)
Contextual Approach to Technology Assessment: Implications for “One Factor Fix” Solutions to Complex Social Problems.
Louis H. MAYO. (April 71) GWPS-MON 9; 92 pp.

Control of Incinerator-Caused Air Pollution in New York City: 1946-1985.
Richard MYRICK and Barbara S. MARX. (March 68) 65 pp. $6.00 GWPS-SDP 202; PB 182-874.

“Controlling the Potential Hazards of Government-Sponsored Technology.”

Ellis R. MOTTUR. (March 71) GWPS-MON 8; 209 pp.

Guy BLACK. (Aug. 68) 32 pp. $8.00 GWPS-SDP 102; PB 182-870.

*Design Evaluation in Technology Assessment.
John F. HALLDANE. (May 72) GWPS-MON 12; 50 pp. $4.75 N72-28970.

Early Experiences with the Hazards of Medical Use of X-Rays: 1896-1906—A Technology Assessment Case Study.
Barbara S. MARX. (Fall 68) 75 pp. $6.00 GWPS-SDP 205; PB 182-877.

**“Earth Resource Surveys: An International Framework Begins to Develop.”

**“Earth Resources Technology Satellite: Securing International Participation.”
John HANESSIAN, Jr. and John M. LOGSDON. From Astronautics and Aeronautics, August 1970. Reprint #10 (Sept. 70) 8 pp.

*Effect of Government Funding on Commercial R & D.*

Guy BLACK. (July 70) 93 pp. GWPS-SDP 104; PB 195-797.

Louis H. MAYO. (Oct. 73) GWPS-MON 16; 30 pp. N74-_______ (Prepared for presentation at the Second International Conference on Unity of the Sciences, Tokyo, Japan, Nov. 18-21, 1973 under sponsorship of the International Cultural Foundation.)

Examples of Technology Assessments for the Federal Government.
Vary T. COATES. (Jan. 70) GWPS-SDP 208; 48 pp. PB 192-555.

Expanding Roles of Non-Profit Organizations as Contractors with Government: Some Research Needs.
Clarence H. DANHOF. (Mar. 68) GWPS-SDP 301; 19 pp. PB 182-879.

Federal Government and the Current Development of Technology Assessment.
Vary T. COATES. (June 71) GWPS-OP 11; 12 pp. PB 201-470.

*Federal Support of Civilian Technology: Theory versus Practice.*
George EADS. (March 73) GWPS-OP 16; 24 pp. N73-72514.

Financial Variables Associated with R & D Expenditures by Industry.
Guy BLACK. (Jan. 68) 12 pp. GWPS-SDP 300; PB 182-878.

Forecasting in International Relations.
Stuart GREENBERG. (June 70) GWPS-SDP 407; 29 pp. PB 192-563.

*Generating Social Impact Scenarios: A Key Step in Making Technology Assessment Studies.*
Martin V. JONES. (April 72) GWPS-MON 11; 20 pp. $3.25 N72-24978.

*Genetic Engineering.*
Dan S. MURRELL. (61 pp.) and
Barbara S. MARX. (Fall 68) GWPS-SDP 205; 75 pp. $6.00 PB 182-877.

*“Earth Resource Surveys: An International Framework Begins to Develop.”

**“Earth Resources Technology Satellite: Securing International Participation.”
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"Law's Interface with Expanding Technology.
(CR-129270); N73-12987.

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Harold P. GREEN. (Jan. 68) GWPS-MON 1; 9 pp.
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"On the Cost of Engineering Education.
Guy BLACK. (Nov. 70) 174 pp. GWPS-MON 7; 31 pp. PB 196-539.

Organizational Cybernetics and Human Values.
Richard F. ERICSON. (Sept. 69) GWPS-MON 4; 17 pp. PB 192-545.

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James M. BROWN. (July 69) GWPS-SDP 402; 64 pp. PB 192-558 [Became Reprint #7]

"Probing the Law and Beyond: A Quest for Public Protection from Hazardous Product Catastrophes."

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Promising Approaches Toward Understanding Technology Transfer.
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Science Policy and Public Affairs in Europe.
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Scientific Method, Adversarial System, and Technology Assessment.
Louis H. MAYO. (Nov. 70) GWPS-MON 5; 114 pp. PB 196-638.

Social Change in the American Value System.

Louis H. MAYO. (March 71) GWPS-SDP 210; 49 pp. PB 199-163.

Louis H. MAYO. (Nov. 72) GWPS-OP 14; 56 pp. $4.75 N73-14968.

Some Comments on Technology Assessment and the Environment.
Raphael MAHONEY. (Nov. 70) GWPS-OP 8; 13 pp. PB 196-640.

Guy BLACK. (July 68) GWPS-SDP 302; 70 pp. $6.00 PB 182-880.

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"Systems Approaches to Socio-Economic Problems Confronting Governments: An Appraisal."

Technology Assessment and Citizen Action.
Ellis R. MOTTUR. (March 71) GWPS-OP 10; 26 pp.

Technology Assessment and Environmental Engineering.

Technology Assessment of Space Stations.
Gary T. COATES. (May 71) GWPS-OP 212; 65 pp.

Technology Assessment: What Should It Be?
Guy BLACK. (June 71) 54 pp. GWPS-OP 211; PB 201-471.

Arthur S. MILLER. (Oct. 72) GWPS-MON 14; 72 pp. $6.00 N73-12988.

Technology Transfer by People Transfer.
Clarence H. DANHOF. (Aug. 69) GWPS-SDP 403; 20 pp. PB 192-559.

"Toward the 'Techno-Corporate' State: An Essay in American Constitutionalism."

"Toward a New Federal Policy for Technology: The Outline Emerges.
John M. LOGSDON. (Aug. 72) GWPS-SDP 408; 30 pp. $3.75 N73-13987.

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What’s Happening to Small Business Research and Development?
Guy BLACK. (May 71) 17 pp. GWPS-SDP 303; PB 201-074.
PUBLICATIONS OF
THE NATIONAL ADVISORY COUNCIL ON
SUPPLEMENTARY CENTERS AND SERVICES

Since 1972 the Council has prepared and published a Quarterly in magazine format. While still available, a complimentary copy of these publications, listed below, may be requested from the National Advisory Council on Supplementary Centers and Services, 425 Thirteenth St. N.W., Suite 529, Washington, D. C. 20004. Copies are accessible for reading or for ordering xerox copies (10¢/page + 50¢ postage and handling) at the Special Collections Section, George Washington University Library, Washington, D. C. 20006. Such requests must be accompanied by your check in the required amount payable to The George Washington University.

1972 January

**Title III in Special Education**

tells the story of Title III's contribution to special education and includes a listing of Title III special education projects. (35 pp.)

April

**"Title III in Environmental Education"**

This publication reviewed a number of Title III projects in this curriculum area and listed all projects operating throughout the country. In this new curriculum field, the publication is one of the first to describe how environmental education may actually be implemented at the elementary and secondary levels, and it has had wide circulation among educators and environmentalists. (34 pp.)

July

**"Title III in Preschool Education"**

This issue of the Quarterly described in detail and in summary a number of projects in this field and listed all programs currently in existence under Title III. (34 pp.)

October

**"Title III and the World of Work"**

This Quarterly reviewed and listed Title III projects in vocational and career education. (34 pp.)

1973 January

**"Title III in Guidance and Counseling"**

This publication brought together information about Title III guidance projects. It also represents one of the first efforts in the field to describe the operation of guidance and counseling programs actually operating in schools. (44 pp.)

April

**"Title III and Changing Educational Designs"**

This issue of the Quarterly describes Title III projects which have implications for long-term and comprehensive changes in educational practices. (51 pp.)

July

**Title III and Cultural Diversity**

deals with projects in bilingual education, cultural awareness, and ethnic studies. (36 pp.)

The Fall, 1973 issue reviews Title III projects in educational administration and management. The Winter, 1973 issue reviews Title III in the Arts.

Also distributed by the Council is a monthly newsletter designed to inform the Title III community of national developments affecting education and of the activities of Title III projects and state administrators.
Books and Project Reports

Listed here are Books written by staff members and published, and Project Reports (published and unpublished). At least one copy of the Final Report of each project is accessible for reading in the library of the Program, as well as in the Special Collections Section of the main University library. However, no copies are available for distribution. Sometimes copies of these reports are available from the sponsoring agency, and when possible, reference numbers for them are cited.


A National Criminal Justice Reference Service.
James E. MAHONEY and David WEEKS. A report. January 1971, 36 pages. Prepared for the Law Enforcement Assistance Administration, Department of Justice, Washington, D. C. The model for an information reference system recommended in this report was the basis for a system which is now national in scope and which is broadening into international application.

A Workbook on Alternative Future Life Styles Related to Energy Demand.

An Integrated Strategy for Aircraft/Airport Noise Abatement.

Analysis of the Need For and Feasibility of More Effective Distribution of Government-Supported Non-Written Material.

Application of Systems Analysis to Government Operations.


Citizen Group Uses of Scientific and Technological Information in Nuclear Power Cases.

Computers in the Classroom: An Interdisciplinary View of Trends and Alternatives.

Decision to Go to the Moon: Project APOLLO and the National Interest.

Joseph B. MARGOLIN and the Educational Policy Group. A book to be published in 1974, the writing of which is supported by a grant from the Ford Foundation. It is based on a report prepared for the U.S. Office of Education in April 1970 entitled "Analysis of the Need For and Feasibility of More Effective Distribution of Government-Supported Non-Written Material."

Education in the 70's.

Effect of Changing Patterns and Levels of Federal Research and Development Funding on Industry.
Prepared for the National Science Foundation, Industry Studies Group.

Effects of Limited-Access Highways on Nearby Churches.

Evaluative Jurisprudence: The Role of Legal System in the Maintenance of Control over the Direction and Rate of Value-Institutional Change in Modern Technological Society.

Evaluative Mechanisms for the Public Experimental Program of the National Endowment for the Humanities.


Homeowner's Title Registration Corporation: A Program to Reduce the Land-Related Costs of Housing.

Innovation Information and Analysis Project.

International Participation in an Experimental Earth Resources Survey Satellite Program.

Inventory and Appraisal of George Washington University Activities in Urban Social/Minority Group Problem Areas.

Laws and Regulatory Schemes for Noise Abatement.


Political Economy of the Space Program.


Revitalization of Small Communities: Transportation Options.

Social Impacts of Civil Aviation and Implications for R&D Policy.

Strategies for the Use of Mass Communications Media in the Technologically Developing Nations.

Vary T. COATES. A report. July 1972, 650 pages. Available from NTIS as follows:
Summary Report (50 pp.) PB-211456 $3.75
Vol. 1, Final Report (350 pp.) PB-211453 $9.00
Vol. 2, Appendices (250 pp.) PB-211454 $6.75
Prepared and supported in part by the National Science Foundation's program of Research Applied to National Needs (RANN).

Technology Assessment Applied to Urban Solid Waste Management.

Technology Assessment Implementation Project.
the National Science Foundation (RANN/ERPA) to develop detailed plans for further, in-depth, interdisciplinary research projects on Society's Acceptance and Implementation of Technology Assessments.

Technology Assessment: The Proceedings of a Seminar Series.

Technology Assessment: Understanding the Social Consequences of Technological Applications.

Technological Innovation for Civilian, Social Purposes.

Toward Increasing the Social Relevance of the Contemporary University.

Program Staff

Staff listing includes those who have contributed all or a substantial part of their effort to Program activities during the period September 1970 through December 1973. Former members of the Staff are listed with Projects commenced prior to January 1971.

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