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The Government-University-Industry Research Roundtable

1995 Annual Report

National Academy of Sciences
National Academy of Engineering
Institute of Medicine

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MASTER

The Research Roundtable was created to foster strong American science and technology through effective working relationships among government, universities, and industry.

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CHAIRMAN'S MESSAGE

The national science and technology environment at the onset of 1996 is charged with strong currents of change and contending visions of the future. The leaders gathering for exchange of ideas at the Government-University-Industry Research Roundtable are among those who feel these currents and uncertainties most directly. Our challenge is to identify priority concerns, and to assure a forum conducive to new ways of looking at the key questions, conflicts, and possible pathways to resolution. Our goal, building on Roundtable sessions, is to stimulate fresh approaches by appropriate governmental and non-governmental entities. I welcome our new Executive Director, Dr. Thomas H. Moss, who will lead and coordinate our efforts. We want to see the best of the new ideas put to test or to pilot application, with eventual development to modernized standards of practice.

We are in a critical but propitious era for American science and technology. We are experiencing severe budget stress in both the public and private sectors, and yet we see new opportunities--brought about by the end of Cold War limitations in exchange of ideas, people, and commerce. However, disagreements persist in both the public and private sectors about the long-range value of science and/or technology investments, as well as about the strategies for making them. These controversies are often fueled by superficial impressions of the process linking the investments to measurable benefits.

The 1980 Report of the National Commission on Research, which stimulated the creation of the Roundtable, focused on easing the adversarial relation between government and research universities. It soon became clear that active industry participation was also necessary for an effective dialogue, and industry leaders have become an important part of the Roundtable.

I suggest now that the current challenge goes well beyond this original purpose. We must not only remove wasteful adversarial or bureaucratic patterns of behavior, but also design cost effective synergy into all national science, technology, and related manpower development activities. Patterns of cooperation and communication must span many sectors, including local government and states, small businesses and international corporations, research universities and community colleges, as well as the major federal agencies. The American public, as well as economic and political leaders, must understand and value the scientific and technological vitality of this nation as strongly as do its scientists and engineers.

The Roundtable is needed more than ever as a major force in building these synergistic efforts. Whether, thirty years from now, U.S. industry has the technology base and work-force it needs for world competitiveness, whether American universities

are still the world standard for training the most creative scientists and engineers, and whether federal and state research centers and programs have found the most cost-effective and results-oriented niche in an overall national effort, will depend strongly on an open and creative dialogue now among those currently responsible for our science and technology investment portfolio. My vision is for the Roundtable to play a major role in initiating and propagating that dialogue, to build a foundation for policies and practices that make the thirty-year horizon a bright one.

Richard F. Celeste
March 1996

STRUCTURE AND OPERATION

Purpose

The Government-University-Industry Research Roundtable was created just over a decade ago to provide a unique forum for dialogue among top government, university, and industry leaders of the national science and technology enterprise. The purpose is to facilitate personal working relationships and exchange of ideas about issues, problems, and promising opportunities that are facing those charged with developing and deploying science and technology resources. The open dialogue and informal exchange of ideas preclude a process of making formal recommendations or offering specific advice. Instead, the Roundtable seeks to stimulate new approaches by dissemination of its discussions, and pro-active contacts with organizations that may want to build on the idea base it establishes.

The Roundtable is sponsored by the National Academies of Sciences and Engineering and the Institute of Medicine.

In 1995 the Roundtable held a retreat to re-visit its original purpose and mode of operation, and to review its accomplishments as well as its future agenda. A revised mission statement was adopted stating that the purpose of the Roundtable is:

> "To convene senior-most representatives from government, universities, and industry to define and explore critical issues related to the national science and technology agenda and its global context that are of shared interest; to frame the next critical question stemming from current debate and analysis; and to incubate activities of ongoing value to the stakeholders.
>
> This forum will be designed to facilitate candid dialogue among participants, to foster self-implementing activities, and, where appropriate, to carry awareness of consequences to the wider public."

The retreat participants put new stress on:

- the value of senior-level participation, and design of meeting preparation, format, and follow-up to facilitate this.
- a focus on the national science and technology agenda, rather than just the national research agenda, reflecting more stress on directed research, on technology, and on incentives for innovation throughout the economy.

- the special capability of the Roundtable in framing and incubating issues, allowing it to play two distinctive roles within the Academy complex and in the science and technology community as a whole: first to initiate analyses in frontier issues that have not been explored; and second, to help convey the results of major analytic efforts to an active leadership group, and thus to help move the insights into practical application.

- the self-implementing character of Roundtable initiatives. The legal context in which the Roundtable is chartered necessarily restricts its ability to make formal recommendations. However, many issues involving all three sectors can be much better understood through open dialogue, and the added insight that comes from the multi-sectoral discussion can lead to an improved understanding that allows participants to return to their individual sectors and take actions consistent with the new ideas; and

- the need for the most challenging and foresightful Roundtable ideas to reach a wider public, in recognition that the national science and technology enterprise is driven by the combined efforts of diverse individuals and organizations of many sizes and types, as well the support of the public as a whole.

The refined mission is designed to recognize the extraordinary flux in the structure of national science and technology endeavors. It emphasizes the need to stimulate change by new mechanisms of partnership that bridge traditional organizational and communication lines. It is meant to facilitate new and innovative thinking, and to create efficient and fast-moving mechanisms to test and develop the new ideas. Operationally, the Roundtable will implement this mission through the leadership of its working groups, as well as or by coordinated efforts with other units of the Academy complex or with the many other dynamic professional, scientific and engineering organizations active in efforts to ensure a healthy national science and engineering base.

Funding

Financial support for the Roundtable comes from a variety of sources. Major supporters during 1995 were several federal R&D agencies including the Departments of Agriculture, Defense, Energy, and Transportation, the National Aeronautics and Space Administration, Federal Drug Administration, National Institutes of Health and the National Science Foundation; and our university-industry partnerships: Duke University/Burroughs Wellcome-Glaxo; University of Illinois at Urbana-Champaign/Motorola; Michigan State University/Dow Chemical Company; Stanford University/Hewlett-Packard; University of California at Los Angeles/Amgen; Washington

University/Monsanto; University of Wisconsin/Procter and Gamble; University of Washington/Battelle Pacific Northwest; Ohio State University--Case Western University/BP America, Inc.; California Institute of Technology/Rockwell International; Florida State University/IBM; Ohio State University/Honda; University of Texas at Austin/Sematech; Northwestern University/Upjohn; Massachusetts Institute of Technology/C.R. Bard, Inc. The long-term funding strategy is built on core support from federal agencies and university-industry partnerships, with supplemental funding coming from foundations, states, and other sources.

Mode of Operation

The Roundtable is guided by a Council that sets the Roundtable agenda, addresses some topics directly, and oversees the plans and activities of working groups that address additional topics. The members of the Council are listed on page 16. With the exception of the federal agency officials, who serve as long as they are in office, Roundtable Council members are appointed to staggered three year terms.

The Council appoints working groups to examine selected topics in depth. The groups elucidate issues, identify problems and opportunities, and consider options for dealing with them. Both near- and long-term goals are pursued. As progress in understanding a particular issue is made, the results are brought before the Council for its deliberation. When an area of concern is believed ready for public discussion, a means of stimulating discourse among all the interested constituencies is devised. These include large by-invitation events, workshops, and targeted distribution of discussion papers. Follow-up activities are organized within and beyond the Roundtable to pursue suggestions for specific policies, procedures, or programs.

The effectiveness of the Roundtable is based on its ability to get the right people together at the right time, supported by appropriate background material and analytical information, to introduce new ideas and deeper understandings into the policy development and implementation processes for the nation's research system. The Council and working group meetings themselves, given the individuals involved, are the central strategy for achieving this goal. Convening additional groups and establishing connections with other organizations and individuals who can take and shape action also are required, however. To that end, the Roundtable makes an effort to maintain communication and working relationships with many associations, scientific societies, executive agencies, Congressional offices, industry representatives, and states.

Key Features

Several features of the Roundtable's structure and operation are central to its effectiveness.

1. Neutral Setting. The sponsorship of the Roundtable by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine provides a neutral setting with credibility among all elements of the research community in the three sectors.

2. Active Council Participation. The senior federal R&D officials, top industry officers, and senior state officials are full and active participants on the Council along with university administrators and faculty. Their contributions and leadership are essential to the accomplishments of the Roundtable.

3. Addressing Problems from both Policy and Operational Levels. The combination of study and analysis by operational-level representatives in the working groups, and discussion by policy-level representatives in the Council, produces an environment that leads to the introduction of new ideas and new procedures into the research system.

4. Balanced Views. A wide range of points of view are presented in Roundtable deliberations. The Roundtable avoids becoming a proponent for the views of any one constituency.

5. Long-term vs. Short-term Issues. The Roundtable strives for a workable balance between attention to broad, ongoing concerns of the research community (for example, an examination of the current status and future prospects for the academic research enterprise and the international context for national research policies) and to the search for solutions to immediate problems (for example, streamlining administrative procedures for government-sponsored university research and for university-industry cooperative research).

6. Flexible Financial Support. Support for the Roundtable is provided by foundations, federal agencies, industry, universities and state agencies. The majority of these funds is provided as general support for the Roundtable, enabling the Roundtable to respond quickly to problems and opportunities as they arise and to address issues in flexible, diverse, and innovative ways.

7. Personalities. The Roundtable is foremost a process—a process for bringing together the diverse constituencies concerned with the research enterprise. The ability of the Roundtable to stimulate constructive change in the system depends on the "delicacy"

and the balance with which it is able to address issues that are typically complex, intractable, emotional, and controversial. As such, it is an intensely personal enterprise, whose effectiveness has depended on the ability of the Roundtable Chairman, the Council, the working groups, and the staff to work constructively with the full range of relevant constituency groups and individuals.

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CURRENT PROJECTS: ACCOMPLISHMENTS AND NEXT STEPS

In order to illustrate the objectives identified above, this section describes the accomplishments and follow-on plans for Roundtable projects active during 1995. Projects completed in prior years are not included here, but publications resulting from them are included in the list of publications on pages 29-25. These address a wide array of concerns including nurturing science and engineering talent, financing research facilities, promoting multidisciplinary research and education, and enhancing federal-state cooperation in science and technology.

Stresses on Research and Education at Colleges and Universities: Phase II

The appropriate scope and balance of activities of universities and of university researchers have become issues of general public debate, receiving front page attention in the popular press. There is broad consensus that the academic community is experiencing stress as a result of changes in local, national, and international contexts, and that morale on campus among researchers has declined. There is consensus, too, that the nation has a direct stake in the continuing strength of the academic enterprise. In an opinion piece published in the Washington Post, the former governor of New Jersey and current president of Drew University, Thomas Kean, stated that at "no other time in history has the possession of knowledge been so strong an indicator of economic wealth. It used to be that colleges and universities graduated people to manage capital. Now, we look to them to create capital. The health and vitality of colleges and universities cannot be separated from the health and vitality of our economy and society."

In 1993, the Roundtable and the National Science Board (NSB) sponsored a series of discussions and meetings to illuminate the major sources of stress affecting the academic research and education community, and to identify possible remedies to particular problems or dilemmas. The project focused attention on the perceptions and suggested responses of faculty and administrators at thirteen academic institutions. Sessions at these campuses revealed a host of factors contributing to the stress on research and education, and these were detailed in the summary reports submitted by each participating school to the Roundtable.

Based on the campus' written reports, and on discussions between university and federal participants at a national meeting that was the capstone of the investigation, the NSB and the Research Roundtable jointly issued a final report on this initiative entitled "Stresses on Research and Education at Colleges and Universities: Institutional and Sponsoring Agency Responses" (Government-University-Industry Research Roundtable, Washington, D.C., July 1994). The report summarizes six specific policy issues

identified by a majority of participants, and it outlines action items or remedies to related concerns. Those issue areas are: (1) creating and communicating priorities in research and education; (2) balancing research and education activities; (3) facilitating multidisciplinary research and education; (4) identifying patterns of institutional support for research; (5) restoring a sense of community on campus; and (6) developing relationships with new partners in research.

Following the release of this report, members of the Research Roundtable Council and of the NSB testified to the catalytic effect of the campus-based dialogues in the first phase of this investigation. Several had observed first-hand the self-scrutiny provoked on individual campuses, and the value of direct communication between the university community and their federal sponsors. Both groups asserted that grass roots approaches to reform are essential to revitalizing the nation's system of higher education and research, and both expressed support for a second phase of this exploration of the stresses on research and education at colleges and universities.

As a result of their deliberations, the Roundtable and the NSB decided in 1995 to launch a second phase of this initiative, and they named a number of eminent scientists and science administrators to a Guidance Group (see page 20) that would oversee the design and stewardship of the study. That group met in November and agreed to a final proposal of scope for the study. The proposal seeks to enlist the participation of 15 new institutions, together with the continuing participation of the 13 original institutions, in a series of campus-based meetings and a second national convocation to be held in Washington in the fall of 1996.

Participants in phase I agreed that achieving maximum value from the insights of this phase of study would require expanding the initial, campus-based dialogues to a wider array of institutions. Participants agreed, too, on the need for national forum that would bring together university and government representatives on a regular basis to review activities and progress on specific policies, programs, and strategies. This phase of the initiative is being proposed in order to facilitate these two goals. As in the previous phase of study, a final report will be issued jointly by the NSB and the Research Roundtable. This report will serve as a record of the insights and common concerns of the project participants, and it will enumerate activities or "best practices" that have proven to be useful in resolving issues identified.

The main objectives of this second phase of study continue to be:

- to catalyze discussions and change on campuses;
- to encourage national dialogue among all parties with interests in the academic enterprise; and

- to revive or recast the compact between the federal government and universities.

Invitations to institutions have been extended by the Roundtable, and campus-based sessions are expected to begin in the spring.

Formulating U.S. Research Policies Within an International Context

In 1994, the Roundtable began a project entitled "Formulating U.S. Research Policies Within an International Context." The purpose of this project is to examine shifts occurring within the worldwide research enterprise and to raise for discussion possible changes that may be appropriate for U.S. research policies.

During Spring 1996, the Roundtable will continue a series of focus groups, inviting members of the Congressional leadership and Congressional staff as well as representatives from government, academia, and industry to discuss their views regarding domestic and international changes affecting the research enterprise. All focus group sessions will be organized around current international issues confronting the U.S. research community and the broader implications for U.S. research policies.

As a follow-up to these discussions, a colloquium will be held to consider options for maintaining a world-class research enterprise. The colloquium will consider the views of university, industry, and federal research investigators as well as the views of the international research community. In late 1996, the Roundtable will publish and disseminate a proceedings report on this colloquium which will serve to stimulate broader discussions.

The Federal Demonstration Project (FDP)

The need to reduce growing tension between government and universities over procedures for administering federally-sponsored research was a primary basis for creation of the Research Roundtable. The most direct way the Roundtable pursues this objective is through its role as coordinator for the Federal Demonstration Project (FDP). The FDP, a cooperative effort among more than fifty universities or research institutes and ten Federal agencies, is designed to improve the management of federally-funded research. The goal is to enhance research productivity without compromising the stewardship of public funds, by eliminating unnecessary administrative procedures and by streamlining those necessary to ensure accountability.

The Federal agencies and research institutions that constitute the FDP work together to design, test, and evaluate procedures aimed at improving the efficiency of sponsored research management. They also cooperate in efforts to clarify current changes to federal government-wide policies issued by the Office of Management and Budget (OMB). In the past, the FDP has successfully advocated revisions to OMB Circular A-110, "Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations," and to OMB Circular A-21, "Cost Principles for Education Institutions."

At the request of OMB, in 1995 the FDP evaluated the prospect of developing and testing ways to subject a greater portion of research costs to the peer review process by charging facilities costs directly to specific research grants and contracts. After considering several models for direct charging space, the FDP concluded that implementing a system of direct charging would place a significant new cost and burden on the university and federal communities. As a result of the increased burden and complexity direct charging would have on the conduct and administration of research, faculty and university administrators consulted by the FDP strongly opposed OMB's proposal to subject a greater portion of research costs to the peer review process. FDP federal grants officials expressed concern over the prospect of direct charging of facilities costs, at least in part due to the anticipated increased complexity, administrative effort, and cost. All in all, the FDP's review suggested that the associated administrative costs and organizational disruptions of implementing such a system would exceed any efficiencies that might be gained. The FDP briefed OMB on these findings in early November.

In 1995, the FDP continued its efforts to formalize a linkage to the Federal government. This process has been very slow. In September 1995, the Director of the President's Office of Science and Technology Policy urged the Committee on Fundamental Science of the President's National Science and Technology Council to "adopt as part of its charge responsibility for reviewing evaluation results" from the FDP. The Committee on Fundamental Science is expected to develop a mechanism for accomplishing this objective by early 1996. The FDP is extremely supportive of this proposed link to the federal policy-making process, and believes that this linkage is a key element to solving problems identified by FDP member agencies and institutions. The FDP remains committed to establishing a formal link with the federal government.

After months of deliberations, the FDP decided to expand its scope and broaden its membership. An RFP for new participants was approved in December 1995. Phase III of the FDP, which will commence in June 1996, aims to establish the FDP as the central test-bed for demonstration of re-engineered processes and systems for federal support of research. While still focused on its primary goals of increased productivity, increased stewardship, and decreased administrative burden, FDP Phase III will turn its attention to

electronic research administration and demonstrations that provide administrative relief for faculty researchers.

Analysis of the Costs of Research in Industrial, Academic, and Federal Labs

In 1992, the Research Roundtable initiated a study to promote better understanding of the costs of research conducted in academic, industrial, and federal laboratories. In a period of constrained resources, Roundtable members felt it was essential to encourage development of a methodology to compare the costs of carrying out research in various settings. This is particularly important in view of common perceptions of wide disparity in these costs across sectors, and the resulting impediments to common ventures and to appreciation of common interests. A final report on this initiative was near completion at the close of 1995.

In this study, James Roth, a partner at Arthur Andersen who agreed to work on the project on a *pro bono* basis, collaborated with seven private and state-supported universities to develop a template to identify and to classify the various elements of costs attributable to research in universities. For purposes of analysis, government-imposed administrative cost ceilings were ignored in order to capture the total costs of research unencumbered by regulatory limitations. The next phase of work focused on obtaining comparable research cost data from industrial and federal research laboratories. The final sample of thirty-three institutions---7 universities, 13 companies, and 13 federal laboratories–completed the common template, all working with the latest complete year of fiscal data available to them. All cost information is strictly confidential, and all technical analyses have been conducted by Arthur Andersen LLP.

In the final report, the elements of the total cost of research will be segregated into three broad categories: Research Laboratory or Academic Department Costs (including scientific salaries, fringe benefits, research-related departmental administrative costs, and other direct costs); Facilities Costs (including depreciation or use allowance for facilities and equipment, hazardous waste management, security, and utilities); and Central Services or Home Office Costs (including executive administration, legal services accounting, library, and other centralized research-related activities). In a second presentation, the total costs of research will be partitioned into the proportion attributable to direct and to indirect expenses (note the latter is not equivalent to the indirect cost rate), including departmental and central administrative expenses and facilities.

Preliminary results indicate that when viewed from either perspective, the pattern of expenditures incurred for research activities in federal laboratories, universities, and industry are strikingly similar, despite common perceptions that there are wide differences. The finding that there is strong comparability of costs is important given the

different organizational structures and types of research characteristic of different research institutions and sectors. Important, too, is the finding that the distribution of costs in academic settings is similar to those of other research performers, contrary to the perceptions of many.

The final report on this effort, due to be released early in 1996, will highlight several caveats to these findings. First, in an area of limited previous work, the methodology developed in this investigation is necessarily experimental, and some issues of comparability remain unresolved. Second, the relatively small sample size, and the non-random selection of participants, together preclude sophisticated statistical analyses. Third, data collected for a single year of expenditures do not illuminate trends, such as rates of inflation or fluctuation in indirect expenses over time. Fourth, neither the quantity, quality, nor value of the research carried out by the diverse organizations were evaluated. Finally, it is important to realize that the three sectors, and individual representatives of each, have differing broad missions. For these last two reasons, the data on research costs alone cannot be used to make comparisons across participants or sectors.

Despite these critical caveats, members of the Research Roundtable believe that the methodology and the findings of this investigation should contribute to improved understanding of the true costs of research. For the first time, there is a simple methodology for examining the costs of carrying out research in universities, industry, and federal laboratories. Policy pertaining to research funding will require empirical analyses of far greater depth than those provided in this assessment of costs across sectors. If this report provides incentive or direction for others towards future studies of research funding, the effort will be a success.

Industry-University Research Collaborations

The prevalence and vitality of research partnerships between industrial organizations and universities have increased dramatically over the last two decades. Data from the National Science Foundation reveal a fourfold increase in the number of university-industry research centers established in the 1980's compared to the number created in the 1970's. One recent report indicates that up to ninety percent of companies with significant biomedical research interests had relationships with academic institutions in 1994, while another survey shows that those growth companies the engage in cooperative ventures with universities enjoy substantial benefits in increased productivity.

Despite the rapid growth and emerging durability of joint ventures, there is surprisingly little empirical information available about the probability of satisfaction or the actual benefits realized by those who engage in collaboration across sectors. In theory, industry looks to academia primarily as a fountain of basic, leading edge research

and as a wellspring of scientifically trained personnel. Entrepreneurial academics, it is commonly believed, turn to industry for additional funding and for access to state-of-the art facilities and equipment. In fact, the limited empirical literature examining the nature of success and of satisfaction in this domain reveals a more idiosyncratic and nuanced portfolio of motivations and considerations. Among few general findings to emerge from limited research is the growing recognition that immediate commercial return is not the only or predominant motivation for companies to enter into research relationships with university researchers.

As the sheer number and complexity of collaborative research partnerships increase members of the Research Roundtable believe it will be ever more important that corporate managers, bench scientists, and decision-makers in government, universities, and industry better understand the structure and nature of successful collaborative ventures. In order to further progress toward this goal, the Roundtable cosponsored, together with the Industrial Research Institute and the Council on Competitiveness, a workshop at Duke University in the fall of 1995. Participants in the conference included representatives of industry and academia who had extensive experience in organizing and managing research collaborations. The agenda was built around four case studies of actual university-industry partnerships and around breakout sessions designed to evoke discussion about the precursors to, and characteristics of, successful joint ventures. The final report on this workshop will present synopses of the case studies and of the content of breakout discussions. This report, scheduled to be released in the spring of 1996, will serve as a guideline for those seeking to stimulate and to nurture collaborative research relationships between academic and industrial participants.

Public Stakeholding in America's Investment in Science and Technology

Much of the United State's economic growth over the past fifty years can be attributed to public investments in science and technology. Indeed, in many areas, government-sponsored research and development spurred the creation of innovative ideas and billion dollar industries. The commercialization of successful research and development endeavors have provided industry with enormous benefits while at the same time contributing to a better lifestyle for most Americans, and an expanding economy.

In the 21st century, the U.S. will face critical public policy issues that are closely linked with advances in science and technology. These problems will overlap traditional boundaries requiring the involvement of all sectors of society in devising solutions. At present, there is much debate over the role the federal government should play in directing and contributing to science and technology. In 1995, the Roundtable began discussing ideas for increasing public awareness and understanding America's Investment in Science and Technology. The goal was to go beyond the current debate over budget issues by focusing on four broader areas: lessons learned from past investment decisions,

metrics for measuring past and future returns on investment, public understanding of the importance of investing in science and technology, and science and technology's ability to meet future challenges.

The Roundtable's November 1995 meeting focused on alternative definitions of the national purpose for Federal investments in science and technology, and means of evaluating these investments. This discussion considered the following: What are the benefits received from investments in R&D? How can we measure these? What does American industry expect from university research: new ideas or well-trained individuals? Have we cast our research net too broadly? How can we assess the value of our investment in any field of science, recognizing the inherent riskiness of research, the long time frame between discovery and application, and the fact that most technologies depend upon numerous component inventions? How can we communicate the benefit derived from these investments to the American public?

The Roundtable believes that a well-informed public is one of the best allies in convincing political and economic leaders of the importance and necessity of strong support for science and technology. In recognizing this, the Roundtable plans to sponsor a competition honoring industry and university programs striving to build community support for science, mathematics, and engineering education in local schools.

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@ Took office during 1995; * Left office during 1995

STRESSES ON RESEARCH AND EDUCATION AT COLLEGES AND UNIVERSITIES: PHASE II

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University-Administration
FREDERICK HUMPHRIES, President, Florida A&M University

Industry
MARK MYERS, Senior Vice President and Chief Technical Officer, Xerox Corporation

Association
WILLIAM WILEY, President, Sigma Xi Society

RICHARD NICHOLSON, President, American Association for the Advancement of Science

Other
BRUCE ALBERTS, President, National Academy of Sciences

ROLAND SCHMITT, President Emeritus, Rennenslaer Polytechnic Institute

ROBERT ZEMSKY, Professor and Director, Institute for Research on Higher Education, University of Pennsylvania

FEDERAL DEMONSTRATION PROJECT

The goal of the Federal Demonstration Project (FDP) is to improve research administration and thereby increase research productivity. Most of the work of the FDP is carried out by government and university representatives in task groups that design and assess demonstrations of new procedures for research administration. The FDP Steering Committee coordinates the task groups and represents the FDP to other bodies, including the Interagency Assessment Committee, which was established by the Office of Management and Budget to oversee the FDP.

Steering Committee

ROBERT BARBRET, Financial Manager for Federal Sponsored Programs, Financial Operations, University of Michigan

ANNE DATKO, Division Director, National Research Initiative, CSREES/NRI, U.S. Department of Agriculture

EARL FREISE, Director, Sponsored Research, California Institute of Technology

PETER V. GARROD, Director of Research, Office of Research Administration, University of Hawaii

JILDA GARTON, Vice President for Research & Administrative Services, Ohio State University Research Foundation

GEOFFREY GRANT, Grants Policy Officer, National Institutes of Health

JUDITH GREENBERG, Director, Genetics Program Branch, National Institute of General Medical Sciences, National Institutes of Health

HARRY R. HARALDSEN, Chief, Policy and Support Division, Air Force Office of Scientific Research

ROBERT HARDY, Acting Head of Policy, Office of Contracts and Grants, National Science Foundation

D. WAYNE JENNINGS, Director, Office of Sponsored Programs, University of Virginia

ROBERT JOHNSON, Vice President for Research & Graduate Studies, Florida State University

JOHN KAVANAGH, Director, Grants and Contracts, Dartmouth College

SUE KOGER, Director, Sponsored Programs/Fiscal Management, Office of the Controller, University of Miami

JAMES LEWIS, Director, Office of Projects and Grants, Columbia University

JACK LOWE, Associate Vice President for Research, Cornell University

DAVID MEARS, Director, Office of Research Administration, University of California

EDWARD MILLER, Executive Director, University of Massachusetts-Lowell Research Foundation

MARILYN MOORE, Director of Contract Services, SRI International

CHARLES PAOLETTI, Director, University Business Affairs, Office of Naval Research

THOMAS REYNOLDS, Director, Division of Grants & Contracts Management, Alcohol, Drug Abuse, and Mental Health Administration

ROBERT C. RICHARDSON, Director, Laboratory of Atomic & Solid State Physics, and Professor of Physics, Cornell University

DAN E. SHACKELFORD, Procurement Analyst, U.S. Army Medical Research & Development Command

MARY ELLEN SHERIDAN, Assistant Vice President for Research, Director-University Research Administration, University of Chicago

JOHN L. SHOWMAN, III, Senior Grants Specialist, Grants Operations Branch, Grants Administration Division, U.S. Environmental Protection Agency

BARBARA SIEGEL, Managing Director, Office of Research & Sponsored Programs, Northwestern University

ELAINE SIMONDS, Administrative Coordinator, Research Administration Services, Johns Hopkins University

PETER TENBEAU, Director, Office of Contract & Grant Administration, Research Foundation, State University of New York

JOHN THURGOOD, Director, Department of Contracts & Grants, University of Southern California

LARRY E. TRAVIS, Chief, Procurement Office, Army Research Office

JO ANN TREAT, President, Texas A&M Research Foundation

MAREDA WEISS, Associate Dean, Graduate School, University of Wisconsin-Madison

NANCY WILKINSON, Assistant Vice President for Research, Office of Sponsored Programs, Emory University

REAL COSTS OF RESEARCH AND PERCEPTIONS OF THOSE COSTS

Phase I Participants

Universities

Indiana University
Massachusetts Institute of Technology
University of California at Los Angeles
University of Pennsylvania
University of Southern California
Vanderbilt University
Washington University

Industry

AT&T Bell Laboratories
Corning, Inc.
General Electric
General Motors Corporation
Hewlett-Packard Company
Phillips Electronics, North America

Phase II Participants

Private Labs

Abbott Laboratories
Bristol-Myers Squibb, Inc.
G.D. Searle and Company
Genetech, Inc.
Monsanto Corporate Research
The Proctor and Gamble Company
The Upjohn Company

Federal Labs

Argonne Laboratories
Pacific Northwest National Laboratory
Brookhaven National Laboratory
John A. Volpe National Transportation Systems Center
Lawrence Berkeley National Laboratory
Lawrence Livermore National Laboratory
Los Alamos National Laboratory
National Institute of Standards and Technology
National Institutes of Health
Oak Ridge National Laboratory
Sandia National Laboratories
SRI International
U.S. Army Research Laboratory

PUBLIC STAKEHOLDING IN AMERICA'S INVESTMENT IN SCIENCE AND TECHNOLOGY

Working Group Members

KENNETH SHINE, *Working Group Chairman*, President, Institute of Medicine

FRANCE CORDOVA, Chief Scientist, National Aeronautics and Space Administration

HOWARD DEAN, Governor, State of Vermont

MORTIMER L. DOWNEY, Deputy Secretary, Department of Transportation

DANIEL GOLDIN, Administrator, National Aeronautics and Space Administration

DEAN KAMEN, President, DEKA Research & Development Corporation

MARTHA KREBS, Director, Office of Energy Research, U.S. Department of Energy

JOE WYATT, Chancellor, Vanderbilt University

ED ZSCHAU, Senior Lecturer of Business Administration, Harvard University

STREAMLINING RESEARCH COSTS AND ADMINISTRATION

Working Group Members

JOE WYATT, *Working Group Chairman*, Chancellor, Vanderbilt University

D. JAMES BAKER, Under Secretary for Oceans & Atmosphere, U.S. Department of Commerce

EARL FREISE, Director, Sponsored Research, California Institute of Technology

SAMUEL KRAMER, Deputy Director, National Institutes of Standards and Technology, U.S. Department of Commerce

HAROLD LIEBOWITZ, President, National Academy of Engineering

MAYNARD V. OLSON, Professor, Department of Molecular Biotechnology, University of Washington

CHARLES PAOLETTI, Director, University Business Affairs, Office of Naval Research

ANNE PETERSEN, Deputy Director, National Science Foundation

ARATI PRABHAKAR, Director, National Institute of Standards and Technology, U.S. Department of Commerce

WILLIAM RAUB, Science Advisor, Department of Health and Human Services

PRESERVING AND INCREASING THE VITALITY OF RESEARCH INSTITUTIONS

Working Group

RICHARD F. CELESTE, *Working Group Chairman*, Former Governor, State of Ohio; and Partner, Celeste and Sabety, Ltd.

CAROL M. BROWNER, Administrator, U.S. Environmental Protection Agency

FRANCE CORDOVA, Chief Scientist, National Aeronautics and Space Administration

MARTHA KREBS, Director, Office of Energy Research, U.S. Department of Energy

NEAL LANE, Director, National Science Foundation

HAROLD VARMUS, Director, National Institutes of Health

WILLIAM WILEY, Senior Vice President, Battelle Memorial Institute

ENSURING THE CONTINUED HEALTH OF OUR SCIENTIFIC HUMAN RESOURCES

Working Group

ERNEST MONIZ, *Working Group Chairman*, Associate Director for Science, Office of Science and Technology Policy, Executive Office of the President

BRUCE ALBERTS, President, National Academy of Sciences

LYNN CONWAY, Professor of Electrical Engineering and Computer Science; Director UMTV Demonstration Project, The University of Michigan

DAVID A. KESSLER, Commissioner, Food and Drug Administration, Public Health Service

WILLIAM J. SPENCER, President and Chief Executive Officer, Sematech

MAX D. SUMMERS, Distinguished Professor, Texas A&M University

DANIEL VAPNEK, Senior Vice President, Research and Development, AMGEN

ROUNDTABLE PUBLICATIONS[+]

[+]All publications available free of charge by writing the Roundtable.

Academic Research Enterprise

The Costs of Research: Examining Patterns of Expenditure Across Research Sectors Report by Arthur Andersen, LLP, for The Government-University-Industry Research Roundtable. Arthur Andersen's analyses conclude that the pattern of expenditures incurred for research activities in federal laboratories, universities, and industry are strikingly similar, despite common perceptions that there are wide differences. (In Press)

Richard Celeste and Roland Schmitt, Government and Higher Education: Renewing the Partnership. - An OpEd article published by the National Academy OP-ED Service. These two prominent observers (Celeste the former Governor of Ohio and Schmitt the former president of Rennselaer Polytechnic Institute) of the links between research, the economy, and public policy, spell out how the next 50 years of university-based research can be as productive as the past 50 years. (August 1994)

Stresses on Research and Education at Colleges and Universities: Institutional and Sponsoring Agency Responses. Report of a collaborative inquiry conducted jointly by the National Science Board and the Government-University-Industry Research Roundtable. The purpose of this report is to contribute to discussions of the choices facing the U.S. academic enterprise as we approach the twenty-first century. (July 1994)

Stresses on Research and Education at Colleges and Universities: Preliminary Summary of Campus Reports. This is a preliminary summary of individual campus reports and recommendations for action prepared as a working document for the National Summary Meeting of a project sponsored jointly by the National Science Board and the Government-University-Industry Research Roundtable, December 7-8, 1993. (December 1993)

Fateful Choices: The Future of the U.S. Academic Research Enterprise - A discussion paper including an optimistic and challenging vision for the future of U.S. academic research; an analysis of the near-term decisions and longer-term options facing the enterprise if the positive vision is to be pursued; and a description of the changing environment for decision making. (March 1992)

The Future of the U.S. Academic Research Enterprise: A Report of a Conference - A summary of a December 9-10, 1991, Roundtable conference held to address

critical issues confronting U.S. academic research and to explore the possibilities for national consensus on the future directions of the research enterprise. (March 1992)

Science and Technology in the Academic Enterprise: Status, Trends and Issues - A discussion paper on the status of the current academic research enterprise, emerging trends affecting it, and major issues to be addressed regarding its future; statistical information on financial, human resource, infrastructure, and organizational trends in academic research. (October 1989)

Multidisciplinary Research and Education Programs in Universities: Making Them Work - A paper by Robert L. Sproul, Harold H. Hall, and members of the Working Group on Institutional Renewal, discussing how to organize, support, and operate multidisciplinary programs in universities. (June 1987)

New Alliances

Intellectual Property Rights in Industry Sponsored University Research: A Guide to Alternatives for Research Agreements - Published jointly with the Industrial Research Institute. (August 1993)

Richard F. Celeste, "Who Benefits From High-Technology Partnerships?" - An Op-ed article published by the National Academy of Science OP-ED Service discussing the potential of partnerships between universities and business to spur economic development, and a major obstacle to such partnerships--disputes over how to use the ideas arising from joint projects. (December 12, 1993)

University-Industry-Federal Laboratory Partnerships: Expectations and Effectiveness - Summary of Issues Raised at the October 1992 Roundtable Council Meeting. (September 1993)

Richard F. Celeste, "A New Partnership in American Science and Technology," - An op-ed article published by the National Academy of Sciences OP-ED Service encouraging federal-state interactions in science and technology. (June 21, 1992)

Federal-State Cooperation in Science and Technology Programs - A discussion paper by the Federal-State Dialogue on Science and Technology. (February 1992)

Industrial Perspectives on Innovation and Interactions with Universities: Summary of Interviews with Senior Industrial Officials - Presents the views of 17 industrial officials on innovation processes in their firms, connections to universities, and national R&D policy. (February 1991)

"Survey to Assess the Usefulness of Two Model Agreements for University-Industry Cooperative Research" - Results of a survey of about 70 university and industry "users" of the model agreements published in 1988. (August 1990)

Simplified and Standardized Model Agreements for University-Industry Cooperative Research - Published jointly with the Industrial Research Institute. (1988)

"Commentary: University-Industry Alliances;" Dorothy Nelkin, Richard Nelson, and Casey Kiernan; Science, Technology and Human Values, Volume 12, Issue 1, pp. 65-74. (Winter 1987)

State Government Strategies for Self-Assessment of Science and Technology Programs for Economic Development - Proceedings of a workshop held April 10, 1987.

New Alliances and Partnerships in American Science and Engineering - Background materials for a conference held December 5, 1985 (issues paper and case studies) along with interpreted highlights of conference sessions.

International Context for Research

Formulating U.S. Research Policies Within An International Context: A Discussion Paper - The purpose of this paper is to provoke discussion among policy makers and the U.S. research community regarding the implications of changing international conditions for the purposes, goals, and capacity of the U.S. research enterprise. (Draft - January 1994)

Future National Research Policies Within the Industrialized Nations - A report of a February 1991 symposium on emerging national research policies and programs. Participants included senior government officials and leading scientists directly involved in formulating research and higher education policies in the United States, Japan, the Soviet Union, the United Kingdom, Germany, and the European Community. (February 1992)

The Academic Research Enterprise Within the Industrialized Nations: Comparative Perspectives - A report of a symposium on the research systems of the U.S., Japan, Soviet Union, Great Britain, Germany, and France. (March 1990)

Improving Research Administration

General:

The Management and Cost of Laboratory Waste Associated with the Conduct of Research: Report of Workshop - The purpose of this report is to contribute to discussions of the management and cost of laboratory waste associated with the conduct of research. (September 1994)

Scanley, D. A. and W. Sellers, "Making Things Better: A Summary of Past Recommendations for Improving the Management of Federally Sponsored Academic Research," Research Management Review, Volume 5 Number 1. (Spring 1991)

Reducing Bureaucratic Accretion in Government and University Procedures for Sponsored Research: New Approaches in Process and Additional Areas for Attention - Proceedings of a hearing held June 5, 1985. (full report and summary)

About the FDP:

"Federal Demonstration Project: Response to the National Performance Review," - A proposal for implementing recommendations of the National Performance Review. (March 1994)

"What is the Federal Demonstration Project?" - A description of a cooperative effort between universities and federal agencies to increase research productivity by eliminating unnecessary administrative procedures and by streamlining and standardizing needed controls. (August 1991)

"Summary of Interim Reports Submitted by Grantee Organizations Participating in the Federal Demonstration Project" - Describes the positive impacts of the FDP on principal investigators, universities, and the general research environment as well as problem areas that need to be addressed. (October 1990)

FDP Studies and Surveys:

"Direct Charging Space Costs," - Prepared by the Federal Demonstration Project Task Force on Direct Charging, the report examines the implications of developing and testing models to subject a greater portion of research costs to the peer review process by charging facilities costs directly to specific research grants and contracts. (October 1995)

"Federal Managers' Viewpoints on FDP Continuation Funding Pilot" - Prepared by the Federal Demonstration Project Task Group on Proposals/Applications, the report provides the results of a survey of federal agency views of the impact of the noncompeting renewal demonstration on the efficiency and efficacy of agency functions. (March 1992)

"Report on Equipment Screening Studies" - Prepared by the Federal Demonstration Project Task Group on Internal Systems, the report examines the cost effectiveness of equipment screening. (December 1991)

"The Impact of Noncompeting Continuation Applications within the Federal Demonstration Project" - Prepared by the Federal Demonstration Project Task Group on Productivity Assessment, the report provides the results of a survey of the time saved by principal investigators under the demonstration of new procedures for non-competing renewal applications. (Draft November 1991)

"The Impact of the Use of Expanded Authorities within the Federal Demonstration Project" - Prepared by the Federal Demonstration Project Task Group on Productivity Assessment, the report describes the results of a survey that assessed the amount of principal investigator time saved during the demonstration of research administration procedures that expand the authority of universities and principal investigators to manage grant funds. The survey also looks at how saved time was reinvested. (February 1991)

"Report on Survey of State Requirements Applicable to Externally Funded Research Activities" - Prepared by the Federal Demonstration Project Task Group on State/Grantee Relations, the report describes the results of a survey on administrative requirements states apply to university research. (November 1990)

"The Florida Demonstration Project: Observations on the Impacts of the Project" - Observations on the impacts of the Project based on information collected on the operation of the Project by the Roundtable in cooperation with the participating universities in Florida. (September 1987)

Priorities

Richard F. Celeste, Testimony before the Subcommittee on Science, Committee on Science, Space, and Technology, Regarding setting Priorities in Science. (April 28, 1992)

What Research Strategies Best Serve the National Interest in a Period of Budgetary Stress? - Interpreted highlights of the discussion at a conference held February 26 and 27, 1986.

Academic Research Facilities

Don I. Phillips, Testimony before the Subcommittee on Department Operations and Nutrition, Committee on Agriculture, United States House of Representatives; Statement of Don I. Phillips, Executive Director, Government-University-Industry Research Roundtable, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, regarding academic research facility financing. (June 17, 1993)

"Research Facility Financing: Near-Term Options" (Working Draft) - Intended as a vehicle for discussion, this document sketches the purposes, costs, impacts, tradeoffs, and political considerations associated with a variety of mechanisms for research facility funding. (February 1991)

James D. Ebert, Testimony before the Rules Committee of the United States Senate; Statement of James D. Ebert, Vice President, National Academy of Sciences, Regarding S. RES. 206-To establish a point of order against material that earmarks research monies for designated institutions without competitions. (June 21, 1990)

"Synthesis of Options for Academic Research Facility Financing" - A summary of three sector-specific workshops in which representatives of federal agencies, universities, and state governments each described alternative approaches their sectors can take to facility financing. The document describes the perspectives of each sector along with options for facility financing that each sector could take. (March 1990)

Perspectives on Financing Academic Research Facilities: A Resource for Policy Formulation - A resource for policy makers and a reference work, this discussion paper addresses objectives of facility funding, strengths and weaknesses of financing mechanisms, facility needs and sources of support, roles of the sectors, and key policy issues. (October 1989)

Academic Research Facilities: Financing Strategies - Proceedings of a conference held July 22 - 23, 1985 (full report and summary)

"Federal Funding of Scientific Facilities" - A discussion of the issues arising from direct congressional funding of facilities. (February 2, 1985)

Science and Engineering Talent

Nurturing Science and Engineering Talent - A discussion paper on the broad outlook for science and engineering talent organized around three themes: the status of the science and engineering talent pool, the factors affecting career choice, and the effectiveness of special programs to encourage science and engineering talent. (July 1987)

Competitiveness

Richard F. Celeste, Testimony before the Subcommittee on Technology, Environment, and Aviation, Committee on Science, Space, and Technology, Regarding the National Competitiveness Act of 1993 and the Role of the States. (February 3, 1993)

"A Dialogue on Competitiveness," Ralph E. Gomory and Harold T. Shapiro, Issues in Science and Technology, Volume IV, Number 4, (Summer 1988)

Annual Reports

Government-University-Industry Research Roundtable Annual Reports, 1985-1995.