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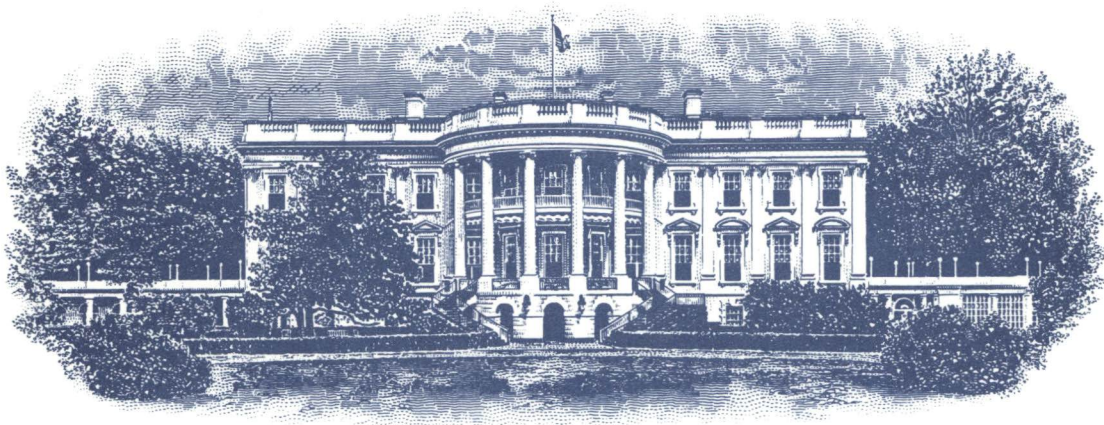
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**PRESIDENT'S COUNCIL OF ADVISORS
ON
SCIENCE AND TECHNOLOGY**



J. THOMAS RATCHFORD

September 12-13, 1991



Peter Likins

*President, Lehigh University
Bethlehem, Pennsylvania*

Age: 55

Years Running: 13

For the president of one of the country's top universities, running is a required course. The strength and stamina Peter Likins has gained through running allow him to serve Lehigh University vigorously and effectively. In the early morning, Likins climbs 2 miles through the steep wooded hills of the campus, winding around the lofty stone buildings.

The strength and stamina Likins gains from running comes in handy in his other favorite extracurricular activity, wrestling. A former collegiate wrestler, Likins returned to the mat in 1990 for an exhibition bout against one of the college's trustees (an ex-national champion) in a symbolic

show of support for Lehigh's wrestling program.

"In my ninth year as a university president, I can speak as a veteran in suggesting that the primary job requirement is stamina," says Likins. "If you can't sustain enormous commitments of energy, all other qualities prove inadequate. I have found that running the hills on my campus is an invigorating way to begin my day. I can run alone early in the morning and in the process tour the campus grounds for which I am responsible. Running also gives me time each day to work alone, thinking about the more distant horizons."



**MEETING OF THE
PRESIDENT'S COUNCIL OF ADVISORS
ON SCIENCE AND TECHNOLOGY**

SEPTEMBER 12-13, 1991

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September 9, 1991

**PRESIDENT'S COUNCIL OF ADVISORS
ON SCIENCE AND TECHNOLOGY**

**SEPTEMBER 12-13, 1991
AGENDA**

THURSDAY, SEPTEMBER 12, 1991

**OPEN SESSION 9:00 AM - 10:30 AM
CONFERENCE ROOM
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, NW**

8:30 - 9:00	ARRIVAL AND COFFEE	
9:00 - 9:15	OPENING REMARKS	DR. BROMLEY
9:15 - 9:45	THE OSTP AGENDA - Key Issues	DR. WELLS
9:45 - 10:00	DISCUSSION	DR. BROMLEY
10:00 - 10:45	THE PRESIDENT'S COUNCIL ON COMPETITIVENESS	MR. HUBBARD
10:45 -	CLOSING REMARKS AND MOVE TO ROOM 476, OLD EXECUTIVE OFFICE BUILDING	DR. BROMLEY

THURSDAY, SEPTEMBER 12, 1991 Continued...

**CLOSED SESSION 11:00 - 5:00 PM
ROOM 476
OLD EXECUTIVE OFFICE BUILDING**

11:00 - 11:45	THE PRESIDENT'S NATIONAL SECURITY STRATEGY	GENERAL SCOWCROFT
11:45 - 12:00	DISCUSSION	
12:00 - 1:00	LUNCH (In Indian Treaty Room)	
1:00 - 2:45	DISCUSSION OF PCAST PANEL DRAFT PAPERS AND REPORTS - High Performance Computing and Communications - Bioscience and Biotechnology - Education and Human Resources - Megaprojects in the Sciences - International Economic Competitiveness - Global Environment and Natural Resources	DR. BUCHSBAUM DR. NATHANS DR. LIKINS DR. MCTAGUE DR. GOMORY DR. LOVEJOY DR. BORLAUG MR. PACKARD
2:45 - 3:00	BREAK	
3:00 - 3:45	S&T STATISTICS AND DATA COLLECTION	DR. NORWOOD
3:45 - 4:45	DISCUSSION	DR. BROMLEY
4:45 - 5:00	OTHER BUSINESS AND CLOSING REMARKS	DR. BROMLEY

FRIDAY, SEPTEMBER 13, 1991

**CLOSED SESSION 9:00 AM - 12:00 NOON
CEA CONFERENCE ROOM
ROOM 324
OLD EXECUTIVE OFFICE BUILDING**

8:30 - 8:50	ARRIVAL AND COFFEE <u>(DR. BROMLEY'S OFFICE, ROOM 358, OEOB)</u>	
8:50 - 9:00	MOVE TO ROOM 324	
9:00 - 9:15	OPENING REMARKS	DR. BROMLEY
9:15 - 10:00	DISCUSSION OF PCAST PANEL DRAFT PAPERS AND REPORTS - Science, Technology and National Security	DR. BUCHSBUAM DR. FOSTER
10:00 - 11:00	DISCUSSION	DR. BROMLEY
11:00 - 11:30	DISCUSSION OF OCTOBER AGENDA AND FUTURE MEETING FORMAT	DR. BROMLEY
11:30 - 12:00	OTHER BUSINESS AND CLOSING REMARKS	DR. BROMLEY

**CLOSED SESSIONS 12:00 PM - 3:00 PM
OLD EXECUTIVE OFFICE BUILDING**

12:00 - 3:00	PANEL DISCUSSIONS - OEOB ROOM 476 - Education and Human Resources	DR. LIKINS
12:00 - 2:00	PANEL DISCUSSIONS - ROOM 22 - Megaprojects in the Sciences	DR. MCTAGUE

PRESS PEOPLE INVITED

Wil Lepkowski	Chemical and Engineering News
Colleen Cordes	Chronicle of Higher Education
Bruce Agnew	Journal of NIH Research
Ed Chen	Los Angeles Times
Chris Anderson or Barbara Culliton	Nature
Chris Joyce	New Scientist
Richard McCormack	New Technology Week
Warren Leary	New York Times
Michael Miller	Performance Materials Magazine
Irwin Goodwin	Physics Today
Dan Greenberg	Science and Government Report
Elliot Marshall	Science Magazine
Arthur Kranish	Science Trends
Tim Beardsley	Scientific American
Jeffrey Mervis	The Scientist
Dick Thompson	Time-Warner
Georgia Persinos	Washington Insight
William Booth	Washington Post

PCAST MEMBERS EXPECTED

<u>Name</u>	<u>Thursday</u>	<u>Thursday Dinner</u>	<u>Friday</u>
Borlaug	Yes	Yes	Yes
Buchsbaum	Yes	Yes	Yes
Drake	Yes	Yes	Yes
Gomory	Yes (Will miss Open Session, arrives about Noon)	Yes	Yes
Good	No	Yes	Yes
Likins	Yes	Yes	Yes
Lovejoy	Yes	Yes	Yes
Murrin	No	No	No
McTague	Yes	Yes	Yes
Nathans	Yes	No	Yes
Packard	Yes	Yes	Yes
Shapiro	No (Arrives Thursday evening, may attend dinner)	No	Yes
Healy	Yes	Yes	Yes
Massey	Yes	Yes	Yes

THE WHITE HOUSE
WASHINGTON

July 29, 1991

MEMORANDUM FOR MEMBERS OF THE PRESIDENT'S COUNCIL OF
ADVISORS ON SCIENCE AND TECHNOLOGY

FROM: D. ALLAN BROMLEY
CHAIRMAN

Duan

SUBJECT: September PCAST Meeting

The various advisory groups and panels under PCAST in which you are participating are now in the final stages of formation. Because we have decided not to have an August meeting, I trust you will have time to focus on the substantive discussions underway in your respective panels.

The September meeting should provide us with an excellent opportunity to begin preliminary, substantive discussions on the issues currently underway in the various panels. It will also afford us an opportunity to become familiar with the issues, and receive initial feedback and guidance from our colleagues. To provide each of you with adequate preparation before the next meeting, and to maximize our productivity, I am requesting of the panel chairs: 1) a brief, one page summary giving the status of their panel's work; 2) lists of issues that should be discussed at the September meeting, and 3) draft documents that could serve as the basis for discussion within PCAST in September and with the President at later meetings.

Please send this material to the PCAST office by August 26. This will allow sufficient time to review and distribute the material and make any necessary changes to the agenda. I only remind you that the documents should be marked as draft and for limited official use only.

Thank you.

For Limited Official Use Only

AT&T

Bell Laboratories

Crawford Corner Road
Holmdel, NJ 07733
908 949-5554

S. J. Buchsbaum
Senior Vice President
Technology Systems

August 26, 1991

Dr. D. Allan Bromley
Assistant to the President on
Science and Technology
Old Executive Office Building
17th Street and Pennsylvania Avenue, N.W.
Suite 358
Washington, DC 20506

Dear Allan:

As requested, this is a short report on the status and progress of the PCAST panels on High Performance Computing and Communications (HPCC) and Science, Technology and National Security (STNS).

We are in the process of completing the formation of the HPCC panel which, as you know, has been delayed by the need to resolve issues of real or apparent conflict of interest. I hope that with those issues behind us now, the panel will begin its work early this fall.

The STNS panel is being more successful. We met twice, on August 5 and 6 in Washington and August 19-20 in San Diego. Our next meeting is scheduled for September 26-27 in Washington when we expect to meet with Brent Scowcroft, Dick Cheney/Don Atwood, Colin Powell, Jim Watkins, Bobby Inman and yourself.

During our first meeting, we succeeded in formulating five issues that we deem to be of presidential importance. These are:

- National Security Technology Strategy for Superiority
- Reform/Defense Infrastructure
- Continuing Vital Importance of Intelligence
- Proliferation: A System Approach
- New Emphasis on Defensive Systems.

They fall under the rubric of our overall objective of a policy for continued U.S. technological superiority.

Needless to say, I would be glad to brief PCAST in more detail on the above at our September meeting.

Sincerely,



Copy to
Members of the STNS Panel

Withdrawal/Redaction Sheet

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Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Presentation	PCAST Panel on Science, Technology, and National Security (8 pp.)	8/22/91	(b)(1)	

Collection:

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Office: Science and Technology Policy, Office of (OSTP)
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Subseries: Organization Files - PCAST
WHORM Cat.:
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 P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

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 (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
 (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
 (b)(9) Release would disclose geological or geophysical information

Dr. Ralph Gomory - 3/26/91

Competitiveness Committee - Status

We would like to recommend to PCAST the names on Attachment A as starting consultants or panel members for the competitiveness subcommittee.

We will use the general outline given as attachment B as the basis for the Subcommittee's work. This is consistent with the subcommittee charter, Attachment C. PCAST has seen both B and C before. However these attachments provide too extensive an agenda so we need to select some starting points.

Therefore we suggest to PCAST the following as initial areas of discussion.

1. What can be done to improve the status of and focus on manufacturing in the U.S.

Discussion: Manufacturing is critical to international trade, and to the American standard of living. Manufacturing industries also account for almost all (more than 95% of the R&D done in the private sector. These areas tend to be the areas of new product and of productivity improvement. Nevertheless Manufacturing itself had, as of a few years ago, almost dropped out of the academic curriculum, and was not a highly paid or highly regarded area. There are efforts today to develop manufacturing curricula - but unless the graduates are esteemed and paid by industry this will also be a dead end.

What can raise the status and rewards of manufacturing?

What skills, other than the engineering ones are needed in manufacturing? Does the educational system provide people who can work intelligently in a manufacturing line or is the vocational end of education inadequate?

2. Critical Technologies. What role if any should the government play in developing roadmaps or strategic plans around "critical technologies".

3. To what extent and in what ways can Federal Labs be expected to contribute to growth?

I also think that it is a fact that the Federal Government itself is ill structured to deal with problems of economic growth, and probably needs some evolutionary changes to deal with what will be increasingly important issues. This is perhaps a better subject (if it is a good subject at all) for PCAST itself than for a committee.

ATTACHMENT A

Dr. James C. Williams
General Electric Company
Schenectady, New York

Professor S. Ramalingam
University of Minnesota
Mechanical Engineering Department
Director of Productivity Dept.

Dr. Jerry R. Junkins
Chairman, President and CEO
Texas Instruments
13510 N. Central Expressway
North Building
Dallas, Texas 75243
Tel. (214) 995-6130

Professor Kent H. Bowen
Massachusetts Institute of Technology
Department of Mathematics
Room 9-325
Cambridge, Mass. 02139
Tel. (617) 253-6892

THE WHITE HOUSE
WASHINGTON

June 12, 1991

MEMORANDUM FOR RALPH GOMORY

President's Council of Advisors on Science and Technology
(PCAST)

FROM:

D. ALLAN BROMLEY *Alan*

SUBJECT:

TERMS OF REFERENCE FOR PCAST PANEL ON
INTERNATIONAL ECONOMIC COMPETITIVENESS

You are requested to establish a PCAST Panel on International Economic Competitiveness.

The purpose of this Panel is to enable PCAST to advise the President on issues in science and technology that affect U.S. economic competitiveness and quality of life.

The private sector today is facing severe competition from abroad where vastly improved industries are emerging even in the most advanced technical areas, and where the more traditional industries have shown great ability to improve their manufacturing process and development technologies. Industry abroad is also making effective use of the high skill level of some of the competitive work forces.

In addition there are foreign government policies closely supportive of emerging and strategic technologies and designated industries.

While product competitiveness is largely the result of the internal actions of individual firms, firms are also influenced by their surroundings. Familiar examples of this from the economic arena are cost of capital and tax structure.

But there are other and more technically oriented aspects of the surroundings as well.

First there is the availability of new scientific and engineering knowledge. This is the kind of knowledge that historically has launched whole new industries, radically different materials, or provided new sensors to make possible new instruments, etc. It is a longstanding Federal role to contribute here and many government agencies have focused on this.

The Report of the Panel on National Critical Technologies selected 22 technologies deemed critical to national economic prosperity and to our military security. The Department of Defense, in its "Critical Technologies Plan" presents dual-purpose technologies which are adaptable to enhancing the economic competitiveness of the private sector. The Department of Commerce has issued its "Emerging Technologies Report" which identifies 12 emerging technologies. Also, the private sector Council on Competitiveness issued "Gaining New Ground - Technologies Priorities for America's Future" identifies priorities for enhancing economic competitiveness.

With regard to technologies, President Bush has stated: "If America is to maintain and strengthen our competitive position, we must continue not only to create new technologies, but to learn to more effectively translate those technologies in commercial products."

In addition to new technologies there is a second aspect in the need for improvement of existing product. This includes research on existing process and manufacturing, or improved materials. Sometimes the availability of special and extreme instrumentation is useful. Sometimes it is the support of long range projects beyond a single firm's economic time horizon. Federal examples include Sematech and Brookhaven synchrotron light source.

A third competitiveness element is the availability of a technical labor force. This means vocational training as well as the training of scientists and engineers. To the extent that other panels do not deal with some aspects of this, I would like this to be included in the work of his committee.

In the areas of new technology, product improvement, and technical workforce I would like the Panel to:

- o Report on how best to enhance the partnership between the government and the private sector aiming at a major improvement in our competitive position, and
- o Discuss actions that the government and the private sector can take, together or separately, aimed at enhancing our competitive posture.

The Panel shall submit a preliminary report to the PCAST within 3 months after the Panel's first meeting.

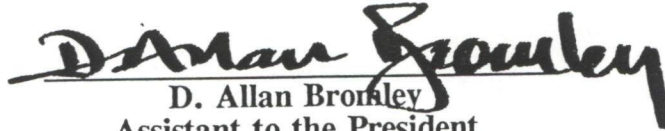
The Office of the Associate Director for Industrial Technology, Office of Science and Technology Policy, will sponsor the Panel. Dr. Ralph Gomory will serve as Chairman and Dr. Harold Shapiro will serve as Vice Chairman. Mr. William Snyder will serve as the PCAST Secretariat Representative.

Determination

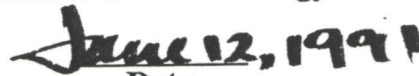
I hereby determine that the formation of the PCAST Panel on International Economic Competitiveness is in the public interest in connection with the performance of duties imposed on the Executive Branch by law, and that such duties can best be performed through the advice and counsel of such a group.

The Terms of Reference for the PCAST Panel on International Economic Competitiveness include no assignment requiring Panel members to participate personally and substantially in the conduct of any specific procurement, or place any member in the position of acting as a "procurement official."

Approved:



D. Allan Bromley
Assistant to the President
for
Science and Technology


Date

ATTACHMENT C

May, 1990

Competitiveness Subcommittee - Outline of the Area

Introduction

To study the aspects of competitiveness in which science, technology and engineering play a major role and, where appropriate, suggest Federal action that could contribute to competitiveness.

This subcommittee should stress product competitiveness. It is important to our country to be "competitive" in basic science or in new technologies such as high temperature superconductivity, but this subcommittee should relate these areas to product competitiveness.

When it can the subcommittee should be free to consider the effect of competitiveness or the lack of it on standard of living and on defense questions.

Elements of competitiveness

Product competitiveness is largely the result of the internal actions of individual firms. It is a consequence of how well they manufacture, how well they support, use, and manufacture R&D, how well they train and motivate their employees etc. These factors are not easily reached by government action. However firms are also influenced by their surroundings.

Examples of this from the economic arena are cost of capital and tax structure. particularly depreciation rules and such items as the R&D tax credit.

In the legal area there are the traditional questions relating to anti-trust, as well as the newer areas of product liability and intellectual property.

But there are other and more technically oriented aspects of the surroundings as well.

I. Availability in the environment of new scientific and engineering knowledge. This is the kind of knowledge that historically has launched whole new industries, radically different materials, or provided new sensors to make possible new instruments etc., etc. This would include in principle really new processes that would eventually find their way into manufacturing although this has not been emphasized in the U.S. It is a longstanding Federal role to contribute here.

Federal Precedents.

Support of Basic Research - ONR, NSF, NIH etc.

Fostering new technologies such as A.I. by support of university or (small) company research.

Spinoffs to Industry - NASA

Contributions from Federal Labs - DOE

Support of Consortia for very advanced technology - DARPA

Abroad

Support of Basic Research - Most advanced countries

Fostering new technologies - Japan MITI

Support of Consortia for very advanced technology - Japan MITI, Europe

EUREKA etc.

Contributions from Federal Labs - Japan

Example options

Federal labs take on advanced commercial technology role

Federal support of university-industry interactions.

(centers, fellowships to industry)

II. Environment supportive to Improvement of Existing Product.

This is less a matter of really new scientific knowledge more a question of taking the next engineering step, a step usually aimed at product. Sometimes it is a question of adapting existing knowledge to the special product situation or of transferring existing knowledge to a firm that could use it. Examples would include research on existing process and manufacturing, or improved materials. Sometimes the availability of special and extreme instrumentation is useful. Sometimes it is the support of long range projects that are project oriented but beyond a single firm's economic time horizon.

Federal precedents

NACA

Brookhaven synchrotron radiation

Sematech

NIST technology transfer centers

DARPA support of Gallium Arsenide

Foreign

Japan - some MITI Consortia

Japan - The role of NTT

Japan - Financial support of key industries

Example options

Support of advanced manufacturing centers

Support of advanced technology consortia

More consistent R&D tax policy. Better Manufacturing depreciation.

Support of travel abroad by small businesses to learn competitive techniques.

III. Availability of Technical Labor Force.

Training and orientation of Scientists and Engineers as well as technically competent people for a production environment.

Clearly the availability of good people makes a difference. So does their attitude and motivation. U.S. attitudes have favored science as high prestige, design engineering as less prestigious and manufacturing is rarely mentioned. However all branches of technical work are currently not much sought after. The Federal government has played a role in this training especially through its connection with research grants and fellowships.

Vocational Training in the U.S. is a low prestige and possibly poor content activity.

Federal Precedents

Fellowships

Grants

Presidential Young investigator awards

Foreign

All major countries send students, graduate students, or postdocs to the U.S. in addition to funding their own.

Vocational training is sometimes more highly developed.

Example options

Support of changes in the engineering curriculum

Awards "Presidential Manufacturing Fellowship"

Presidential speech including importance of manufacturing excellence.

Study the need for and state of vocational education.

Green Cards for foreign graduates of U.S. Universities.

For limited Official Use

Draft 08/20/91
Daniel Nathans

Status of the Panel on Bioscience and Biotechnology

Panel members: Daniel Nathans (Chairman)
Norman Bordang

OSTP representatives: D. A. Henderson,
Rachel Levinson

Experts:

Dr. Theodore Cooper
Chairman and CEO
Upjohn Company

Dr. Arthur E. Humphrey
Professor and Director
Center for Molecular Bioscience and Biotechnology
Lehigh University

Dr. Ernest G. Jaworski
Former Vice President for Biological Sciences
Monsanto Company

Dr. Bryant Rossiter
Former Vice President
ICN

Dr. Arthur H. Rubenstein
Professor of Medicine
University of Chicago

Dr. Philip A. Sharp
Professor of Biology and Director
Center for Cancer Research, E17-525B
MIT

Dr. Edward Penhoet
Vice Chairman and CEO
Chiron Corporation

Current status and plans:

Briefing materials have been distributed and Experts have been asked to draft issues papers as follows:

Theodore Cooper "Policies that Will Enhance Industrial Research and Development"

Arthur E. Humphrey "Meeting the Human Resource Needs in the Biosciences and
Biotechnology : the Role of the Federal Government"

Arthur H. Rubenstein "Promising Opportunities in Bioscience and Biotechnology Related to Health : How Do We Get There"

Ernest G. Jaworski "Regulatory Barriers to Innovation" and "Promising Opportunities in the Plant Sciences and Agricultural Biotechnology"

Bryant Rossiter "Regulatory Barriers to Innovation"

Philip A. Sharp "Enhancing Basic and Applied Research and Product Development"

Edward Penhoet "Transfer of Technology from Federally Supported Laboratories" and "Special Problems of Small Biotechnology Companies".

The Panel and Experts will meet in late October or early November and again in January, after which a report to PCAST will be drafted.

Limited official use only

Draft 08/20/91
from Daniel Nathans

Suggested issues for PCAST discussion

1. Pre- and post-doctoral training in the U.S. of foreign scientists: U.S. objectives.
2. Follow-up on critical technologies policy.
3. Assessing environmental carcinogens (someone from EPA)
4. Investigation of alleged fraud in federally supported research.

Suggested topics for presentation at open sessions of PCAST

1. Resources from the sea (ask David Packard)
2. AIDS- Anthony Fauci (NIH)

Lehigh University



For Limited Official Use Only

Peter Likins, President

Alumni Memorial Building 27
Bethlehem, Pennsylvania 18015
telephone (215) 758-3155

RECEIVED

91 AUG 12 P4:34

August 7, 1991

OFFICE OF THE
DIRECTOR

MEMORANDUM

TO: D. Allan Bromley
FROM: Peter Likins
SUBJECT: Panel on Education and Human Resources

The panel will meet from noon to 3PM on 13 September, immediately following the PCAST meeting. We will receive testimony from three experts in the field:

- Dr. Julian Stanley of the Johns Hopkins University
Study of Mathematically Precocious Youth
- Dr. Paul Sally of the University of Chicago Department
of Mathematics
- Dr. Stephanie Marshall of the Illinois Mathematics and
Science Academy.

All members of PCAST are encouraged to participate.

Our agenda calls for discussion of strategies for developing the full potential of American youth with the capacity to perform at advanced levels in science, mathematics and engineering.

We want to know what can be done to identify and stimulate latent talent, recognizing that capable American girls and some talented American minorities are most often lost as potential contributors to science and technology.

We seek also a better understanding of strategies to nurture the talents of promising youth. In particular, we have a special interest in the influence of teachers and other mentors on the development of budding young scientists, mathematicians, and engineers.

A handwritten signature in cursive script that reads "Peter Likins".

It™ brand fax transmittal memo 7871

of pages 1

From	ALLAN BROMLEY	From	TOM LOVEJOY
Co.	8-14-91	Co.	
Dept.		Phone #	786-2263
Fax #	395-3261	Fax #	11 - 2304

E HOUSE
INGTON

, 1991

AUG 02 1991

① DAB
② ~~Victoria Smith~~
Tom Welch

MEMORANDUM FOR MEMBERS OF THE PRESIDENT'S COUNCIL OF
ADVISORS ON SCIENCE AND TECHNOLOGYFROM: D. ALLAN BROMLEY
CHAIRMAN

Duan

SUBJECT: September PCAST Meeting

The various advisory groups and panels under PCAST in which you are participating are now in the final stages of formation. Because we have decided not to have an August meeting, I trust you will have time to focus on the substantive discussions underway in your respective panels.

The September meeting should provide us with an excellent opportunity to begin preliminary, substantive discussions on the issues currently underway in the various panels. It will also afford us an opportunity to become familiar with the issues, and receive initial feedback and guidance from our colleagues. To provide each of you with adequate preparation before the next meeting, and to maximize our productivity, I am requesting of the panel chairs: 1) a brief, one page summary giving the status of their panel's work; 2) lists of issues that should be discussed at the September meeting, and 3) draft documents that could serve as the basis for discussion within PCAST in September and with the President at later meetings.

Please send this material to the PCAST office by August 26. This will allow sufficient time to review and distribute the material and make any necessary changes to the agenda. I only remind you that the documents should be marked as draft and for limited official use only.

Thank you.

8/14

1. I want to wrap up the population paper and start to plan one on Biological diversity
2. Population
3. I am finishing up this draft with Nancy Maynard

Tom

DRAFT For Limited Official Use Only

DRAFT

PCAST paper on population

Burgeoning population growth is an important underlying and driving force behind many of the topics PCAST has responsibility to review. Agricultural and fishery productivity, supplies of energy and raw materials all have economic implications and are seriously affected by human population increase. So are environmental pollution and the magnification of social ills associated with movement of population into urban centers particularly in the developing countries. The National Academy report on the Policy Implications of Climate Change cited human population growth as a key driving factor. Much of the effect of our foreign aid has been undercut by population growth.

In our lifetimes we have seen the second third, fourth and fifth billionth person added to the world's population. This year the increase will exceed ninety million and before the end of this decade we will add the sixth billion. At this rate world population growth will double in 39 years. Over ninety percent of the growth is occurring in the less developed countries. Those are the least capable of coping with such numbers. Redistribution of people is not a realistic solution. It is unlikely this country would be willing to accept another 100 million people - essentially just a single year of world population increase.

[graph]

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We wish to point out the importance and magnitude of the factor of human population growth and that it is easier and cheaper to address it in appropriate ways now rather than later. Further we wish to draw the clear distinction between population control (better word?) achieved voluntarily through family planning, and other approaches including abortion. Abortion is properly viewed as the failure of family planning.

1. Population Growth and World Food Supply

Since 1940, in many parts of the world where modern production technology has been used, yields per unit area have increased spectacularly. The "Green Revolution" enabled Indian wheat production to increase from 11 million tons in 1966 to 54.5 tons in 1989; that country has been self sufficient in cereals since 1975 despite a population increase from 450 million in 1965 to 850 million in 1990. Between 1961 and 1988 the world per capita food supply increased from 335 kg (of what?) per year to 440 kg per year. In this country the production of the 17 most important food, feed and fiber crops increased from 252 million metric tons in 1940 to 610 million tons in 1980, with only a 3 percent increase in cultivated area. Had yield per area not increased, 177 million hectares of additional agricultural land (equivalent to all land east of the Mississippi excluding Illinois, Wisconsin and Michigan) would have been necessary to generate the increased food

production. Increasing agricultural productivity by bringing additional land under cultivation is no longer possible in many of the densely populated areas of Asia and Latin America. In other areas, increasing land under cultivation could be achieved only at the price of serious land use problems such as watersheds and biological diversity.

2. A Population Research Agenda for the 1990s

Health alone is a notable factor. Unsafe patterns of childbearing (i.e., too early, too late, or too closely spaced in a woman's reproductive life) are very important in high maternal and child mortality. These factors, together with unsafe medical conditions at childbirth, result in about 400,000 deaths each year in developing countries. An additional 100,000 deaths result from unsafe illegal abortion procedures. It is estimated that good family planning services could eliminate as many as half of the maternal deaths from childbirth and abortion. In addition, widespread use of effective family planning alone could probably cut infant and child mortality by 20 percent, saving some 3 million children each year in the Third World.

a. Research to Improve Delivery of Family Planning Services

Delivery of family planning services in all countries is

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hampered by inadequate resources and inefficient approaches to getting the necessary information and services to those who need them. An expanded program of field research could serve to develop and evaluate innovative approaches such as distribution of contraceptives through local community organizations, subsidized commercial retail sale of contraceptives, and improving client satisfaction with long term use of contraception.

b. Improved Contraceptive Technology

The National Research Council's Institute of Medicine, in a 1990 study, documented the role that new, improved contraceptives could play in helping couples control their fertility with greater certainty, safety and economy of cost. By the end of this century about a billion couples will need birth control but only \$15 million per year is available from government funds (AID and NIH) for applied research on contraceptive development. The U.S. pharmaceutical industry, faced with a problematic regulatory climate and product liability lawsuits, has largely abandoned contraceptive development research. At the same time, fundamental discoveries in basic research now offer the prospect for anti-fertility vaccines and for other interventions such as those which would block fertilization of the egg. Such new contraceptive

technologies, especially those which women themselves could use to moderate fertility, would make a significant contribution to the moderation of population growth.

c. The Role of Population Growth in Environmental Deterioration

The relative contribution of population growth to environmental stress has never been quantified. Human numbers along with consumption patterns and technology levels all play a part in the progressive deterioration of the earth's atmosphere, oceans, waterways, forests, agricultural land and biodiversity. Studies which help assess the relative contributions of these various causative agents could help us focus corrective efforts most effectively. Most urgent are studies of the related effects of population pressure and environmental degradation on future food production capacity in regions of the world already subject to periodic drought and famine.

d. The Role of Population Growth in Political Destabilization

Rapid population growth places enormous strains on political institutions. It complicates governance by contributing to massive urbanization, to an imbalanced age

structure, and to labor force expansion which outstrips job creation, especially for urban youth. Additional knowledge of these interrelationships is urgently needed.

3. Examples of Success Stories

Although many social and economic factors influence desired family size, direct efforts to lower birthrates through family planning programs are generally more successful than indirect efforts through other development programs. Reducing child mortality, expanding female education and increasing family incomes are desirable in their own right and are associated with lower birthrates in the long run. These efforts do not, however, always lower birthrates in the short run. They also tend to cost more than family planning. Over time, family planning and social and economic changes are mutually supportive: female education and family planning, for example, have a powerful combined impact on both family size and women's status.

Over the past 15 years a combination of indigenous efforts and donor assistance for population and family planning programs have achieved dramatic success in lowering birthrates in a number of important countries. These fertility declines have occurred not only in economically successful countries, such as Taiwan and South Korea, but also in lower income countries

with lower levels of education such as Indonesia and Zimbabwe. Moreover, the declines in fertility have taken place much faster than demographers would have expected given the example of earlier demographic transitions in Europe and North America. For example, it took 58 years for average family size in the United States to decline from 6 children to about 3.5 children. The same transition took just 27 years in Sri Lanka and Indonesia; and 12 years in Colombia and South Korea.

- a. Mexico. In 1973 its population was growing at 3.3 percent annually and expected to double in 21 years. In 1974 the government launched an extensive family planning outreach program. Average family size has dropped from about six to fewer than four children; population growth is at 2.4 percent annually.
- b. Thailand. In the early 1970's Thailand also had an annual population growth rate of 3.3%. Thailand's public and private sectors have worked in partnership to provide community based family planning services in virtually every village. Contraceptive prevalence rose by 150 percent between 1975 and 1981. Despite low levels of education and income, average family size has dropped to 2.7 children and its annual rate of population growth in 1.7%.
- c. Brazil. In the early 1970's Brazil's population was

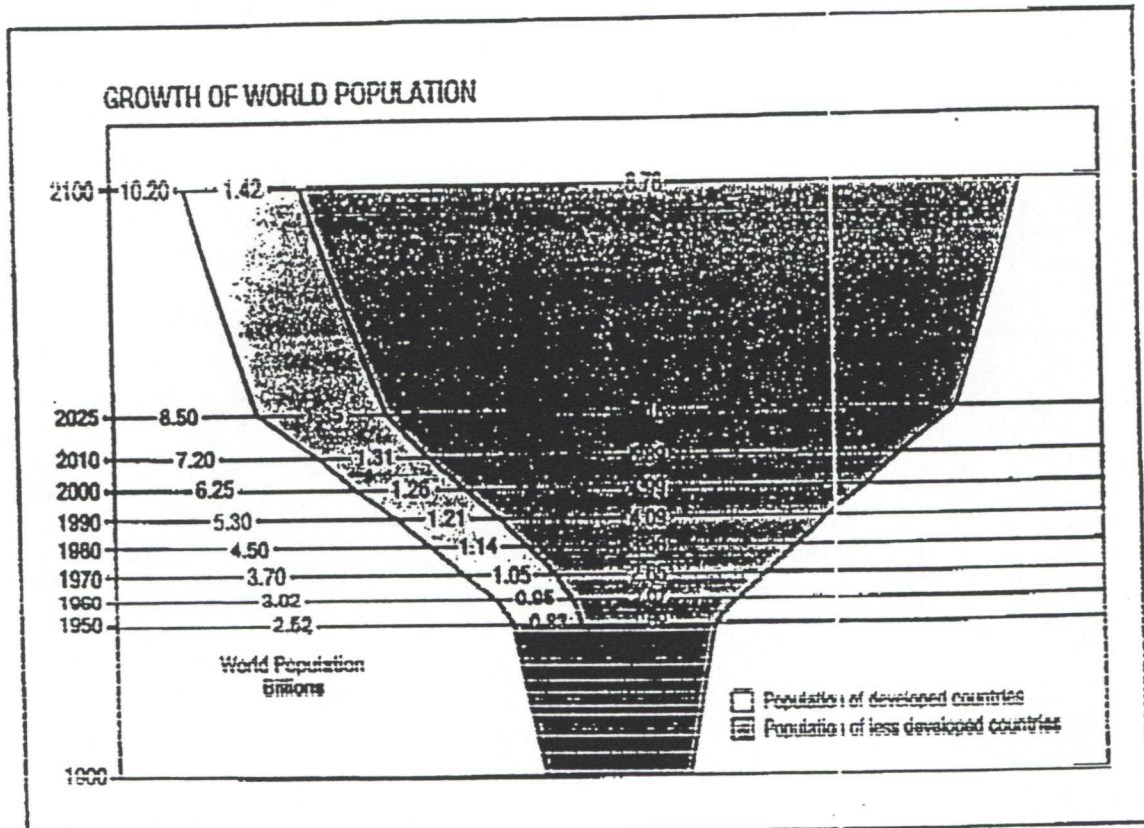
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growing at 2.8% (a doubling time of 25 years). The rate is now 2.0% due to the work of commercial sector and nongovernmental organizations which receive support from AID.

4. Recommended Courses of Action

- a. increased support for international family planning programs
- b. support for a population research agenda

Over 90% of the growth in world population is taking place in the developing world — those countries least able to cope with the resource consequences.



OCTOBER 10-11, 1991 AGENDA

DR. BROMLEY

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THURSDAY, OCTOBER 10, 1991 Continued...

**CLOSED SESSION 11:30 - 5:00 PM
ROOM 476
OLD EXECUTIVE OFFICE BUILDING**

11:30 - 12:00	DISCUSSION OF PCAST PANEL DRAFT PAPERS AND REPORTS - Science and Technology and National Security	DR. BUCHSBAUM DR. FOSTER MR. PACKARD
12:00 - 1:00	LUNCH (In Indian Treaty Room)	
1:00 - 3:30	DISCUSSION OF PCAST PANEL DRAFT PAPERS AND REPORTS - High Performance Computing and Communications - Bioscience and Biotechnology - Education and Human Resources - Megaprojects in the Sciences - International Economic Competitiveness - Global Environment and Natural Resources	DR. BUCHSBAUM DR. GOMORY DR. NATHANS DR. BORLAUG DR. LIKINS DR. DRAKE DR. MCTAGUE DR. SHAPIRO DR. GOMORY DR. SHAPIRO DR. LOVEJOY DR. BORLAUG MR. PACKARD
3:30 - 3:45	BREAK	
3:45 - 4:30	S&T AND THE FOOD AND DRUG ADMINISTRATION	DR. KESSLER
4:30 - 5:00	DISCUSSION OF NOVEMBER AGENDA AND CLOSING REMARKS	DR. BROMLEY

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FRIDAY, OCTOBER 11, 1991

CLOSED SESSION 9:00 AM - 12:00 NOON
ROOM 180
OLD EXECUTIVE OFFICE BUILDING

8:30 - 8:50	ARRIVAL AND COFFEE <u>(DR. BROMLEY'S OFFICE, ROOM 358, OEOB)</u>	
8:50 - 9:00	MOVE TO ROOM 180	
9:00 - 9:15	OPENING REMARKS	DR. BROMLEY
9:15 - 10:15	S&T AND U.S. COMPETITIVENESS	SECRETARY MOSBACHER
10:15 - 11:15	DISCUSSION	DR. BROMLEY
11:15 - 12:00	OTHER BUSINESS AND CLOSING REMARKS	DR. BROMLEY

**THE PRESIDENT'S COUNCIL OF ADVISORS
ON SCIENCE AND TECHNOLOGY**

Council and Panel Calendar

June

- 26 **Fact-finding discussion on Science, Technology, and National Security with Sol Buchsbaum, Johnny Foster, Charles Herzfeld in Boston, MA.**

July

- 11 **President's Council of Advisors on Science and Technology, Open Session - 9:00 AM to 11:00 AM, CEQ Conference Room, 722 Jackson Place. Closed Session - 11:00 AM - 5:00 PM, Room 476, Old Executive Office Building.**
- 12 **President's Council of Advisors on Science and Technology, Closed Session - 9:00 AM to 12:00 NOON, Roosevelt Room, West Wing.**

August

- 5 **Panel on Science, Technology and National Security, Closed Session - 9:00 AM to 5:00 PM, Room 476, Old Executive Office Building.**
- 6 **Panel on Science, Technology and National Security, Closed Session - 9:00 AM to 5:00 PM, Room 476, Old Executive Office Building.**
- 19 **Panel on Science, Technology and National Security, Closed Session - 9:00 AM to 5:00 PM, Room 2064A, Naval Ocean Systems Center (NOSC), San Diego, CA.**
- 20 **Panel on Science, Technology and National Security, Closed Session - 8:00 AM to 2:00 PM, Room 2064A, Naval Ocean Systems Center, (NOSC), San Diego, CA.**

September

- 12 **President's Council of Advisors on Science and Technology, Open Session - 9:00 AM to 11:00 AM, CEQ Conference Room, 722 Jackson Place, NW. Closed Session - 11:00 AM to 5:00 PM Room 476, Old Executive Office Building.**

- 13 President's Council of Advisors on Science and Technology, Closed Session - 9:00 AM to 12:00 NOON, Location TBD. Discussion of Education and Human Resources, 12:00 NOON to 3:00 PM, Room 476, Old Executive Office Building. Discussion of Megaprojects in the Sciences, 12:00 NOON to 2:00 PM, Room 22, Old Executive Office Building.
- 26* Panel on Science, Technology and National Security, Closed Session - 9:00 AM to 5:00 PM, Room 476, Old Executive Office Building.
- 27* Panel on Science, Technology and National Security, Closed Session - 8:00 AM to 12:00 NOON, Room 180, Old Executive Office Building.

October

- 10 President's Council of Advisors on Science and Technology, Open Session - 9:00 AM to 11:00 AM, CEQ Conference Room, 722 Jackson Place. Closed Session - 11:00 AM to 5:00 PM, Location TBD.
- 11 President's Council of Advisors on Science and Technology, Closed Session - 9:00 AM to 12:00 NOON, Location TBD.

November

- 14 President's Council of Advisors on Science and Technology, Open Session - 9:00 AM to 11:00 AM, CEQ Conference Room, 722 Jackson Place. Closed Session - 11:00 AM to 5:00 PM, Location TBD.
- 15 President's Council of Advisors on Science and Technology, Closed Session - 9:00 AM to 12:00 NOON, Location TBD.

December

- 2* Panel on Science, Technology and National Security, Closed Session - 9:00 AM - 5:00 PM, Location TBD.
- 3* Panel on Science, Technology and National Security, Closed Session - 8:00 AM - 12:00 NOON, Location TBD.
- 12 President's Council of Advisors on Science and Technology, Open Session - 9:00 AM to 11:00 AM, CEQ Conference Room, 722 Jackson Place. Closed Session - 11:00 AM to 5:00 PM, Location TBD.
- 13 President's Council of Advisors on Science and Technology, Closed Session - 9:00 AM to 12:00 NOON, Location TBD.

* Tentative

PCAST PANEL ACTIONS
(September 11, 1991)

	Sol, Ralph	Ralph, Harold	Dan, Norman	Peter, Chuck	Sol, Johnny Foster, David	Tom, David, Norman	John, Harold
	High Perfor. Computing & Commun.	International Economic Competitive.	Bioscience and Biotech.	Education & Human Resources	Technology & National Security	Global Environ. & Natural Res.	Megaprojects in the Sciences
Information Briefing on Topic	MAR '90	MAY '90 JUL '90	APR '90	APR '90	FEB '91	MAY '90 JUL '90 FEB '91	FEB '91
Issues & Panel Members Discussed	MAR '90	APR '91	MAY '90 MAR '91	JUL '90 SEP '90 MAR '91	FEB '91 MAR '91	FEB '91	FEB '91 MAR '91 APR '91
Terms of Reference, Members Approved	APR '90	MAY '91	MAY '91	MAY '91	APR '91	MAY '91	MAY '91
Progress Report #1	JUL '90	JUL '91	JUL '91	JUL '91	JUL '91	JUL '91	JUL '91
Progress Report #N	APR '91 MAY '91 JUL '91 SEP '91	SEP '91	SEP '91	SEP '91	SEP '91	SEP '91	SEP '91
PCAST Briefed							
PCAST Position Taken							
Discuss With President							
Status Review							

1991-1992

PCAST Meeting Schedule

September 1991

S	M	T	W	T	F	S
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October 1991

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November 1991

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December 1991

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January 1992

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February 1992

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September

- 2 Labor Day
- 9 Rosh Hashanah
- 12 8:30am PCAST SEPTEMBER MEETING
- 13 8:30am PCAST SEPTEMBER MEETING
- 18 Yom Kippur

October

- 10 8:30am PCAST OCTOBER MEETING
- 11 8:30am PCAST OCTOBER MEETING
- 14 Columbus Day (Observed)
- Thanksgiving Day (Canada)
- 27 Daylight Savings--set back 1 hour
- 31 Halloween

November

- 11 Veterans Day
- 14 8:30am PCAST NOVEMBER MEETING
- 15 8:30am PCAST NOVEMBER MEETING
- 28 Thanksgiving

December

- 2 Hanukkah
- 12 8:30am PCAST DECEMBER MEETING
- 13 8:30am PCAST DECEMBER MEETING
- 25 Christmas

January

- 1 New Year's Day
- 9 8:30am PCAST JANUARY MEETING
- 10 8:30am PCAST JANUARY MEETING
- 20 Martin Luther King, Jr.

February

- 6 8:30am PCAST FEBRUARY MEETING
- 7 8:30am PCAST FEBRUARY MEETING
- 12 Lincoln's Birthday
- 14 Valentine's Day
- 17 President's Day
- 22 Washington's Birthday

March

- 5 8:30am PCAST MARCH MEETING
- 6 8:30am PCAST MARCH MEETING
- 17 St. Patrick's

April

- 1 April Fools Day
- 2 8:30am PCAST APRIL MEETING
- 3 8:30am PCAST APRIL MEETING
- 5 Daylight Savings--set ahead 1 hour
- 19 Easter

May

- 7 8:30am PCAST MAY MEETING
- 8 8:30am PCAST MAY MEETING
- 10 Mother's Day
- 16 Armed Forces Day
- 25 Memorial Day (Observed)

June

- 4 8:30am PCAST JUNE MEETING
- 5 8:30am PCAST JUNE MEETING
- 14 Flag Day
- 21 Father's Day

July

- 1 Dominion Day (Canada)
- 4 Independence Day
- 9 8:30am PCAST JULY MEETING

March 1992

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April 1992

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May 1992

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June 1992

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July 1992

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August 1992

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RESUME

EMERSON J. ELLIOTT

Address: 2038 N. Stafford Street, Arlington, Virginia 22207

Telephone - Office (202) 219-1828 Home (703) 525-1707

EMPLOYMENT EXPERIENCE

November 1984 to Present	Acting Commissioner for Education Statistics, Department of Education
November 1982-1984	Director, Issues Analysis Staff, Department of Education
June 1981-October 1982	Director, Planning and Evaluation Service (Consultant to the Secretary)
May 1979-January 1981	Director, HEW School Finance Project
March 1978-April 1979	Director, Educational Staff Seminar
August 1977-February 1978	Practitioner in Residence, <u>Institute for Educational Leadership</u>
August 1971-July 1977	Deputy Director, National Institute of Education
July 1970-April 1972	Deputy Chief, Human Resources Programs Division, Office of Management and Budget
September 1967-June 1970	Assistant Director for Education, Programs Human Resources Division, Bureau of the Budget
June 1957-August 1967	Budget Examiner, Federal Education Programs, Bureau of the Budget

AWARDS AND OTHER ACTIVITIES

Presidential Rank Award for Distinguished Executive Service, 1987
Presidential Rank Award for Meritorious Executive Service, 1983
Outstanding Public Service Award, American Society for Public Administration 1990
NIE Director's Superior Service Award, 1979
Albion College Distinguished Alumni Award, 1975
William A. Jump Award for Exemplary Achievement in Public Administration, 1970
Nominated by the Department of Education for the Roger Jones Award, 1982 and 1983
Member, AERA, ASA

EDUCATION

AB Degree from Albion College, Albion, Michigan, June 1955. Graduated with "highest honors." Member of Phi Beta Kappa, Phi Mu Alpha Sinfonia music fraternity). Major - physics, minors - music, mathematics, and economics.

MA in Public Administration, University of Michigan, 1957. Elected to Phi Kappa Phi honor society. Program chairman and President, Ann Arbor Chapter, American Society for Public Administration. Federal Executive Institute residential program, March 1970.

DR. MARY LOWE GOOD
Senior Vice President-Technology
Allied-Signal Inc.
101 Columbia Road
Morristown, NJ 07962-1021

Dr. Good is senior vice-president for technology at Allied-Signal Inc. in Morristown, New Jersey. Allied-Signal Inc. is a \$12 billion industrial corporation with sectors in Aerospace, Automotive, and Engineered Materials (chemically based products). Dr. Good has line responsibility for the 500 person Corporate Research and Technology organization and staff responsibility for the company's overall technology portfolio.

She earned her Ph.D. in chemistry at the University of Arkansas in 1955. Before joining Allied-Signal, she was professor of chemistry at the University of New Orleans and professor of materials science at Louisiana State University, where she achieved the university's highest professorial rank, Boyd Professor.

Dr. Good's memberships include the American Chemical Society, the American Institute of Chemists, and the Royal Society of Chemistry. She has been active on the boards of directors of such groups as the Industrial Research Institute, Oak Ridge Associated Universities, and the National Institute for Petroleum and Energy Research, and has served on advisory panels for the National Research Council, the National Bureau of Standards, the National Science Foundation Chemistry Section, and the National Institute of Health. She is presently a member of the Bureau of the International Union of Pure and Applied Chemistry. She was appointed to the National Science Board by President Carter in 1980 and again by President Reagan in 1986. She currently serves as Chairman of that body.

Her honors include election to membership in the National Academy of Engineering and as a Fellow for the American Association for the Advancement of Science. She received the American Institute of Chemists' Gold Medal and was chosen Scientist of the Year by Industrial Research and Development magazine. Dr. Good was appointed as a Foreign Member of the Royal Swedish Academy on Engineering Sciences in 1990, became a member of The Tau Beta Pi Association, was awarded the Charles Lathrop Parsons Award of the American Chemical Society, and received the Industrial Research Institute Medalist Award. She has eleven honorary college degrees and has published over 100 articles in refereed journals. Dr. Good is the author of a book, Integrated Laboratory Sequence, published by Barnes and Noble.

ALLAN B. HUBBARD

Allan B. Hubbard serves as Deputy Chief of Staff for the Vice President. He also serves as Executive Director of the Council on Competitiveness.

Before joining the Vice President's office, Mr. Hubbard was a successful businessman in Indianapolis who has owned and operated companies that manufacture specialty chemical products and jet aircraft engine components.

In 1988, Mr. Hubbard served as Deputy Convention Manager for the George Bush for President Campaign at the Republican National Convention in New Orleans. He is an honors graduate of Vanderbilt University (B.A., 1969), Harvard Law School (J.D., 1975) and Harvard Business School (M.B.A., 1975). He was chosen Small Business Person of the Year in 1983 for the State of Indiana by the Small Business Administration and is a member of the Tennessee Bar. Mr. Hubbard and his wife, Kathryn, live in Washington, D.C. with their three children.

THOMAS J. MURRIN

Thomas J. Murrin was named Dean of Duquesne University's School of Business and Administration; effective January, 1991 -- after serving for 18 months as Deputy Secretary of the U.S. Department of Commerce; nominated by President George Bush and confirmed by the U.S. Senate.

At the Department of Commerce -- with its approximately 40,000 people and an annual budget of about \$3 billion -- Murrin was deeply involved in a variety of executive activities including the 1990 Decennial Census; the Malcolm Baldrige National Quality Award; the Modernization of the National Weather Service; the new Advanced Technology Program; oversight of the Patent and Trademark Office; and -- through the International Trade Administration and the Export Administration-- important relations with dozens of nations around the world.

Since returning to Pittsburgh, he has continued his participation on the NASA Advisory Council and the Manufacturing Forum -- and President Bush has just appointed him to be a member of the President's Council of Advisors on Science and Technology (PCAST), and Tom has been selected for the Executive Committee of the Council on Competitiveness. He has also joined the Board of Directors of Motorola -- and of the Duquesne Light Company.

Murrin retired in 1987 as president of the Westinghouse's Energy and Advanced Technology Group -- an organization with nearly \$5 billion in annual sales. He was a member of the Westinghouse Management Committee -- the top policymaking body of the corporation -- from 1974 until his retirement. Quality and productivity improvement were elevated as key corporate concerns under his guidance. During his career, he travelled to more than 40 countries.

Building on his extensive foreign travel and study of industrial operations overseas, Murrin served as a U.S. delegate to the NATO Industrial Advisory Group; headquarters in Brussels, Belgium. He was a member of the Defense Policy Advisory Committee on Trade (DPACT) of the Department of Defense and served a Chairman of DPACT's Subcommittee on Trade Relations with Japan.

He was the first Chairman of two private sector advisory committees to the Federal Government: the Board of Overseers of the Commerce Department's Malcolm Baldrige National Quality Award, and the Defense Department's Defense Manufacturing Board. Murrin was a member of the President's Commission on Industrial Competitiveness -- and was Chairman of the Board of Governors of the Aerospace Industries Association.

Murrin's honors include: Order of Merit, Westinghouse Electric Corporation (1968); Annual Achievement Award in Business, Fordham University (1976); National Leadership Award, American Productivity Center (1981); James Forrestal Memorial Award, National Security Industrial Association (1983); Election to the National Academy of Engineering (1985); Manufacturing Management Award of the Society of Manufacturing Engineers (1986); Hall of Fame, Cardinal Hayes High School (1988); Honorary Degree of Doctor of Management Science, Duquesne University (1989); and Excellence in Manufacturing Award, National Security Industrial Association (1989).

January 1991

DR. JANET L. NORWOOD
Commissioner of Labor Statistics

EDUCATION: Ph.D., Fletcher School, Tufts University
M.A., Fletcher School, Tufts University
B.A., Douglas College, Rutgers University

U.S. GOVERNMENT EXPERIENCE:

- U.S. Commissioner of Labor Statistics, Bureau of Labor Statistics (BLS), Department of Labor: May 1979 to present
- Acting Commissioner, BLS: April 1978 to May 1979
- Deputy Commissioner, BLS: October 1973 to April 1978
- Other positions in BLS 1963-73

OTHER EXPERIENCE:

- Research, William L. Clayton Center, Fletcher School of Law and Diplomacy, Tufts University
- University teaching, Wellesley College

HONORS:

- LL.D (Honorary), Carnegie-Mellon University, 1984
- LL.D (Honorary), Florida International University, 1979
- Fellow: American Statistical Association
Royal Statistical Society
National Association of Business Economists
American Association for the Advancement of Science
- Member, Alumni Hall of Fame, Rutgers University
- Douglass Society for Distinguished Achievement, Douglass College

BRENT SCOWCROFT

General Scowcroft was appointed as Assistant to the President for National Security Affairs on January 20, 1989.

General Scowcroft was born in Ogden, Utah on March 19, 1925. He was educated in Ogden City schools and entered the Army in 1943. He received an appointment to the United States Military Academy at West Point, New York, where he graduated in 1947. He received a Master's Degree in 1953 and a Doctorate in 1967 in international relations from Columbia University, and has also attended Lafayette College, Georgetown University School of Language and Linguistics, Armed Forces Staff College, and the National War College.

He graduated from pilot training in October of 1948 and then served in a variety of operational and administrative positions from 1948 to 1953. In 1953, he was assigned to the Department of Social Sciences at the U.S. Military Academy, where he was appointed assistant professor of Russian history. He remained there until 1957, when he entered the Strategic Intelligence School in Washington, D. C.

From June 1959 to August 1961, General Scowcroft was assigned as Assistant Air Attache in the American Embassy, Belgrade, Yugoslavia. In February 1962, he was transferred to the United States Air Force Academy in Colorado and served as professor and Acting Head of the Political Science Department.

From September 1964 to June 1967, General Scowcroft was assigned to Headquarters, U.S. Air Force, in the office of the Deputy Chief of Staff, Plans and Operations, and served in the Long Range Planning Division, Directorate of Doctrine, Concepts and Objectives.

General Scowcroft was assigned in July 1968 to the Office of the Assistant Secretary of Defense for International Security Affairs and served in the Western Hemisphere Region. In September 1969, he was reassigned to Headquarters, U.S. Air Force, in the Directorate of Plans as Deputy Assistant for National Security Council Matters. In March 1970, he joined the Organization of the Joint Chiefs of Staff and became the Special Assistant to the Director of the Joint Staff.

General Scowcroft served as Military Assistant to the President from February 1972 until August 1973. In January 1973 he became Deputy Assistant to the President for National Security Affairs. In November 1975 he was appointed Assistant to the

President for National Security Affairs, a position which he held until the end of the Ford Administration on January 20, 1977. He was retired from military service on December 1, 1975 with the rank of Lieutenant General.

He served as a member of the Board of Visitors at the U.S. Air Force Academy during 1977-1979 and was a member of the President's General Advisory Committee on Arms Control from 1978 to 1981. In 1983 he was appointed Chairman of the President's Commission on Strategic Forces and in 1985 was appointed to the President's Blue Ribbon Commission on Defense Management. He served in 1986-1987 as a Member of the President's Special Review Board (Tower Board) investigating the Iran-Contra affair.

Until assuming his current position, General Scowcroft was Vice Chairman of Kissinger Associates, Inc. and a member of several corporate boards.

He was also a Director of the Council on Foreign Relations and the Atlantic Council of the United States, a Vice Chairman and Director of the United Nations Association of the United States, a member of the Advisory Council of the Johns Hopkins University School of Advanced International Studies, a member of the Board of Visitors of the Mershon Center of Ohio State University, a Trustee of the Gerald R. Ford Foundation, Meridian House International and the George C. Marshall Foundation.

General Scowcroft has an aeronautical rating as a pilot, and his decorations and awards include the Defense Distinguished Service Medal, National Security Medal, Air Force Distinguished Service Medal with two oak leaf clusters, Legion of Merit with one oak leaf cluster, and the Air Force Commendation Medal.

General Scowcroft is married to the former Marian Horner and they have one daughter.

The National Institutes of Health will host a reception and dinner on Thursday evening, September 12. The reception will include a tour of the NIH campus as well as brief remarks by Dr. Healy and possibly one or two prominent NIH researchers. Transportation will be provided by NIH leaving the OEOB at approximately 5:00 PM and returning at approximately 9:30 PM. The cost will be between \$40 and \$50.

**EXPECTED ATTENDEES
FOR SEPTEMBER 12 PCAST DINNER**

**D. Allan Bromley
Norman Borlaug
Solomon Buchsbaum
Charles Drake
Ralph Gomory
Mary Good
Peter Likins
Thomas Lovejoy
John McTague
Daniel Nathans
David Packard**

Bernadine Healy

Walter Massey

John S. Foster

OSTP Staff

**Charles Herzfeld, Consultant to the Director
Rachel Levinson, Assistant Director for Life Sciences
Vickie Sutton, Assistant Director, FCCSET
Thomas J. Welch, Executive Director, PCAST
Ken Yale, Chief of Staff**

National Institutes of Health

