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**Series:** Bradford, David, Files  
**Subseries:** Subject Files

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**OA/ID Number:** 07919  
**Folder ID Number:** 07919-018

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**Folder Title:**  
President's Council of Advisers on Science and Technology (PCAST) [Agenda, Notes, Paper titled:  
Competitiveness Subcommittee - Outline of the Area]

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<b>G</b>	<b>13</b>	<b>26</b>	<b>3</b>	<b>3</b>

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EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY  
WASHINGTON, D.C. 20506

*felt*

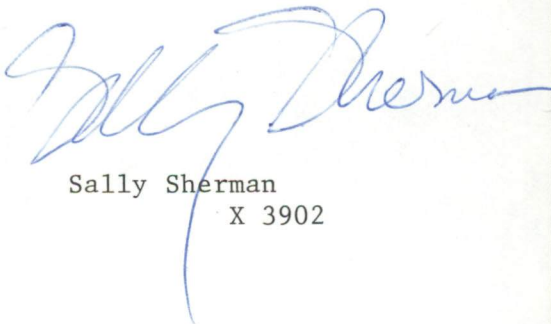
November 18, 1991

FOR Dr. David Bradford  
Council of Economic Advisers

Dr. Wong asked me to provide you the attached agenda and background materials for Thursday's discussion which you'll be attending 2:30-4:00 p.m. in Dr. Wong's office (Room 428). *-Navy*

In consultation with Dr. Ralph Gomory, chair of the panel, he thought the attached outline and TOR would be informative.

Dr. Wong will be back in the office Wednesday, FYI.



Sally Sherman  
X 3902

PCAST Panel on  
Technology, Products, and Manufacturing

November 21, 1991

19  
PCAST

**1. Agenda**

**12:00-1:15** Organization and Selection of Discussion Topics

**1:15-2:00** Working Lunch

**2:00-4:00** Panel Discussion and Task Assignment

**2. Possible Issues**

**Technology Issues**

**Tools and Processes  
Development  
Deployment**

**Investment Issues**

**Surces of Capital  
Tax Policy**

**Management Issues**

**Organization  
Training  
Quality  
Suppliers  
Concurrent Engineering  
etc.**

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.

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.

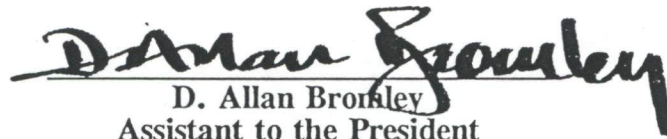
The Office of the Associate Director for Industrial Technology, Office of Science and Technology Policy, will sponsor the Panel. Dr. Ralph Gomory will serve as Chairman and Dr. Harold Shapiro will serve as Vice Chairman. Mr. William Snyder will serve as the PCAST Secretariat Representative.

#### 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

June 12, 1991  
Date

PCAST

11/12/21/24

- manufacturing
- new technology introduction
- education
- available of new capital

Pres Council of  
Advisors on SET  
(PCAST)

- 95% of R+D money is spent in manufacturing sector

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- quality of the workforce

- mechanical infrastructure: machine tools out of date

- incentives tied to flexibility

- productivity

- build quality into product

- design for ease of manufacture

- $\Rightarrow$  change in work behavior

- just in time

- close relations with suppliers

# Malcolm Baldrige Award

## Education

- Pay for coop programs
- Fellowships for people to come from industry + teach.

• Train people who are there

• Encouraging company training

• Problem in the skilled workforce

• Apprenticeships ~~▲~~  
 • Cooperatives ~~▲~~

UNMIS

New technology

Most start-up companies = spin-offs

SPA : part can

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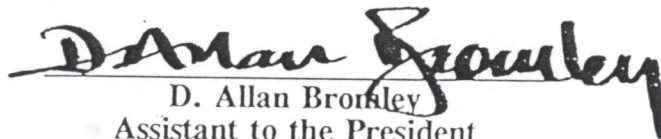
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