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Invitation: Speeches [5 of 7] [1992]

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"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201734

ORIGINATOR: 02

SPEECH: YES NO

FROM: SULLIVAN, Robert S. and ROSSOTTI, Charles O.:
CARNEGIE-MELLON UNIVERSITY and AMS

DATE OF EVENT: THRU:
TENTATIVE DATES: 11/10/92

LOCATION OF EVENT: WALDORF ASTORIA HOTEL, NY, NY

TIME OF EVENT: 5:45 P.M.-10:00 P.M.

SUBJECT: AN INVITATION TO BE THE KEYNOTE SPEAKER AT THE
DINNER CEREMONY HONORING THE WINNERS OF THE FIFTH
AWARDS FOR ACHIEVEMENT IN MANAGING INFORMATION
TECHNOLOGY.

RSVP: 05/29/92

CONTACT PERSON:

CONTACT NUMBER:

INVITATION ACCEPTED? YES

NO

COPIES TO: INDUSTRIAL

REMARKS:

Not recommended.

EW

DATE OF LETTER: 05/13/92

DATE RECEIVED: 05/15/92

FILE: P-INVITATION-SPEECH

American
Management
Systems, Inc.

Graduate School of
Industrial Administration
Carnegie Mellon University

RECEIVED

92 MAY 15 A10:33

1777 North Kent Street
Arlington, Virginia 22209
(703) 841-6000

OSTP
MAIL ROOM



May 13, 1992

The Honorable D. Allan Bromley
Assistant to the President for
Science and Technology
17th Street & Pennsylvania Avenue
Room 358
Washington, D.C. 20500

Dear Dr. Bromley:

On behalf of Carnegie Mellon University and American Management Systems (AMS) we are pleased to extend an invitation to you to be the keynote speaker at the dinner ceremony honoring the winners of the Fifth Awards for Achievement in Managing Information Technology.

We are particularly interested in having you speak because in this age of intense global competition, your perspective on the role of science and technology in meeting the demands of a dynamic marketplace would be of real interest to our audience.

The Awards were established in 1987 as a forum for management to recognize executives and professionals in their organizations for especially impressive implementations of computer systems and communications technology. Nominated by the chief executives of their organizations, the winners are individuals whose achievements have had a major impact on the mainstream activity of their operations.

We have received a great deal of favorable feedback from leading organizations from all sectors of the economy regarding the establishment of the Awards. Since 1987, nearly 1,000 private and public sector organizations have submitted nominations.

Previous Award winners have included senior executives from United Technologies Corporation; Federal Express; Frito-Lay; the U.S. Department of Justice; NASA, Johnson Space Center; Commonwealth of Virginia, Department of Taxation; Citicorp; The Travelers Corporation; Drew University, Pacific Bell and Levi Strauss, among others.

Awards for Achievement in Managing Information Technology

Past keynote speakers at the Awards dinner were Walter B. Wriston, former Chief Executive of Citicorp; Dr. Martin S. Feldstein, President of the National Bureau of Economic Research and Harvard Professor; Admiral Bobby R. Inman, former Deputy Director of the CIA, Director of the National Security Agency and Chairman and CEO of the Microelectronics and Computer Technology Corporation (MCC); and Dr. Rosabeth Moss Kanter, Professor of Business Administration and Editor of the Harvard Business Review, Harvard Business School.

The Fifth Awards ceremony will take place in November 1992 at the Waldorf-Astoria Hotel in New York City. We have tentatively scheduled the date of Tuesday, November 10, with Wednesday, November 4 and Thursday November 5 as alternatives, although we will consider other dates according to your availability. We would request that you join us from 5:45 p.m. until 10:00 p.m. on the day of the Awards ceremony.

The program audience will include approximately 125 individuals including:

- The information management executives and the CEO or other senior executive from the award-winning organizations, honorable mentions, and other senior executives from commercial and noncommercial organizations.
- Members of the national business media, computer press, industry press, and wire services.
- Information industry influentials such as association leaders, market researchers, and industry analysts.
- The award judging panel, which includes representatives from Carnegie Mellon University, AMS, previous award winners, and outside executives.
- Senior executives from Carnegie Mellon University's GSIA and AMS.

As our keynote speaker, we would work closely with you to develop a 45 minute speech on a topic related to the theme of our program and tailored to incorporate mentions of the Award winners.

Dr. D. Allan Bromley
Page 3

A schedule of the evening's agenda is attached. We have also enclosed examples of the type of press coverage that the Awards program has generated.

Carnegie Mellon University and AMS would be honored to have you speak at the Awards ceremony in November 1992.

Sincerely,



Robert S. Sullivan
Dean, GSIA
Carnegie Mellon University



Charles O. Rossotti
Chairman
American Management Systems, Inc.

Enclosures

PLANNED AGENDA
1992 AWARDS CEREMONY

5:45 - 6:00 p.m.	Introductions
6:00 - 6:30 p.m.	Photo session
6:30 - 7:30 p.m.	Reception
7:30 - 8:00 p.m.	Award presentations
8:00 - 8:55 p.m.	Dinner
8:55 - 9:00 p.m.	Introduction of keynote speaker
9:00 - 9:45 p.m.	Keynote speech
9:45 p.m.	Closing remarks and champagne toast

Fourth Award Winners

David M. Carlson, Kmart
Richard A. Detweiler, Drew University
John F. Muratore, NASA, Johnson Space Center
John W. Turko, Kennametal
C. Diana Whitehead, Pacific Bell

Third Award Winners

Jane E. Bailey, Commonwealth of Virginia, Department of Taxation
R.W. (Bill) Eaton, Levi Strauss
Paul F. Glaser, Citicorp (*Retired*)
James C. Grant, Royal Bank of Canada (*Retired*)
G. Nichols (Nick) Simonds, Chrysler (*currently with Honeywell*)

Second Award Winners

George A.L. David, United Technologies
George J. Feeney, Dun & Bradstreet
Charles S. Feld, Frito-Lay
Phyllis A. Gardner, U.S. Dept. of Justice (*currently with Steptoe & Johnson*)
John P. Singleton, Security Pacific

First Award Winners

Joseph T. Brophy, Travelers Insurance
Michael P. Cruskie, State of New York (*currently with Charter Account Systems*)
C. Clinton (Clint) Joyce, Albertsons (*Retired*)
Ron J. Ponder, Federal Express (*currently with US Sprint*)
Michael R. Zucchini, General Re Corporation (*currently with Fleet/Norstar Financial Group*)



American Management Systems, Inc. (AMS) is dedicated to delivering practical solutions to large-scale organizations through the effective use of information technology. AMS is an authority on the planning, design, implementation, and operation of large-scale systems, and offers a full range of professional services and proprietary applications systems for critical functions. Founded in 1970, AMS is headquartered in Arlington, Virginia and has offices in 26 cities throughout the United States, Canada, and Europe.



Founded in 1949 by prominent management educators G. Leland Bach, William W. Cooper, Richard M. Cyert, and Herbert A. Simon, the **Graduate School of Industrial Administration** is the business school of **Carnegie Mellon University** in Pittsburgh, Pennsylvania. The school has pioneered educating future managers in the use of quantitative methods and computer/communications technology. This analytic approach gives GSIA a unique perspective on the direct benefits and effects technology has on large-scale organizations.

American Management Systems, Inc.
1777 North Kent Street
Arlington, Virginia 22209
(703) 841-6000



Fifth Awards for Achievement in Managing Information Technology

American Management Systems, Inc.

Graduate School of Industrial Administration
Carnegie Mellon University

The Awards for Achievement in Managing Information Technology

American Management Systems, Inc. (AMS) and Carnegie Mellon University's Graduate School of Industrial Administration (GSIA), have designed the Awards for

Achievement in Managing Information Technology to recognize those executives and professionals who have made outstanding contributions to their organizations through the effective use of computer systems and communications technology.

The Awards for Achievement in Managing Information Technology are a platform for management to recognize its senior executive's achievements and to position its organization as a front-runner in utilizing information technology effectively.

The award criteria are based on the degree to which the executive had a significant impact on the organization. AMS/GSIA will consider the individual's performance in enabling his or her organization to improve service, reduce costs, increase productivity, enter new markets, or seize a competitive advantage. Direct AMS clients will not be eligible.

The individual's leadership role in the innovative use of computer and communications technology—in promoting the project, ensuring its adoption and success within the organization, and achieving objectives—will be judged.

Award Judging

If you wish to nominate an individual for the Awards for Achievement in Managing Information Technology, please write a letter detailing the achievement, or complete the enclosed nomination form and return it by May 15, 1992.

Candidates will be considered through a three-step screening process. The first-level screening of the nominations will be completed by June 15, 1992. After the initial screening, additional information will be requested for selected nominees. The second and third-level screening will involve reviewing the information, possibly conducting an on-site visit, and selecting the finalists by September 15, 1992.

The winners of the awards will be selected by a panel of judges that will include AMS and GSIA, and other senior information systems executives. The winners will be notified by September 30, 1992. An awards dinner ceremony will be held in New York City in November 1992 to honor the winners. The winners will be presented with a Steuben sculpture and an honorarium. A prominent executive will speak at the dinner. Previous keynote speakers have been Walter B. Wriston, former Chairman and CEO of Citicorp; Martin S. Feldstein, Professor of Economics, Harvard University; Admiral Bobby R. Inman, formerly CEO of several technology firms, and senior U.S. intelligence officer; and Rosabeth Moss Kanter, Class of 1960 Professor of Business Administration at Harvard University and Editor of the *Harvard Business Review*. The press will be invited to publicize the event and the leaders.

As computer and communications systems become increasingly important in managing the flow of information among all areas of corporate, governmental, and educational life, innovative and effective management of information resources has become a highly valued skill.

Often, it is the ability of a single senior executive—to conceptualize and implement large-scale projects—that will determine the organization's return on its investment in computer and communications resources. The return is realized through higher productivity, reduced costs, or securing a competitive advantage.



American
Management
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Graduate School of
Industrial Administration
Carnegie Mellon University

FOR IMMEDIATE RELEASE
March 2, 1992

1777 North Kent Street
Arlington, Virginia 22209
(703) 841-6000

Contact: Lois Levin/Brenda Wheeler
Makovsky & Company
(212) 532-6300

CALL FOR NOMINATIONS:
FIFTH AWARDS FOR ACHIEVEMENT IN MANAGING INFORMATION TECHNOLOGY

Program Cosponsored by AMS and
Carnegie Mellon's Graduate School of Industrial Administration

Arlington, VA -- American Management Systems, Inc. (AMS) and the Graduate School of Industrial Administration of Carnegie Mellon University (GSIA) announced today that they are seeking nominations for the Fifth Awards for Achievement in Managing Information Technology.

The Awards, launched in 1987, are presented to senior information systems executives and professionals from leading organizations who, through the effective use of computer and communications technology, have made outstanding contributions to their organizations. Nominations are made by the CEOs and other top executives of the organizations. Submissions for this year's Awards are due by May 15, 1992.

"As we celebrate the Fifth anniversary of the Awards, we reflect upon the achievements of our previous winners, and look forward to recognizing a new group of outstanding individuals who have demonstrated that, when applied

-more-

Awards for Achievement in Managing Information Technology

effectively, information technology can contribute significantly to an organization's performance," commented AMS Chairman, Charles O. Rossotti. A first-level screening of the nominations will be completed by June 15, 1992. After this initial round, additional information will be requested for selected nominees. Second and third-level screenings will include further review of the information, possibly through on-site visits. The selection of winners is conducted by a panel of judges from AMS, Carnegie Mellon University's GSIA and other organizations, and will be completed by September 15, 1992. The Awards will be presented in November 1992 at a ceremony in New York City, and the winners will receive a commemorative Steuben sculpture and honorarium.

Award winners are selected based on the degree to which the nominated individual meets the following criteria:

- Enhanced management decision-making capabilities and planning.
- Provided competitive advantage.
- Delivered major efficiencies.
- Improved management controls or reduced risks.
- Improved service to clients, managers, or other professionals with relationships important to the organization.

"The Awards are a unique opportunity to salute those individuals whose vision

and exemplary leadership have greatly impacted the performance of their organizations," said Robert S. Sullivan, Dean of Carnegie Mellon University's Graduate School of Industrial Administration. Winners of the Fourth Awards were individuals from Drew University; Kennametal Inc.; Kmart Corporation; NASA, Johnson Space Center; and Pacific Bell. Honorable mentions went to executives from the Los Angeles Unified School District, and MCI Telecommunications Corporation.

Information for submitting nominations can be obtained by contacting Mrs. Jan Dodson, American Management Systems, Inc., 1777 North Kent Street, Arlington, VA 22209, (703) 841-5830.

AMS is a leading firm in turning information technology's promise into effective solutions. The company, which completed its twenty-second consecutive year of growth, is headquartered in Arlington, Virginia, and has offices in 28 cities throughout North America and Europe. AMS's revenues for 1991 were \$285 million.

The Graduate School of Industrial Administration is the business school of Carnegie Mellon University in Pittsburgh, Pennsylvania. The school has pioneered educating future managers in the use of quantitative methods and computer/communications technology. GSIA offers a Master of Science and a Ph.D. in Industrial Administration and a Ph.D. in Economics.

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FOR IMMEDIATE RELEASE

Contact: Brenda Wheeler
Makovsky & Company
(212) 532-6300

**DR. ROSABETH MOSS KANTER ADDRESSES CEREMONY
HONORING WINNERS OF AWARD FOR ACHIEVEMENT
IN MANAGING INFORMATION TECHNOLOGY**

**Drew University, Kennametal, K mart, NASA and Pacific Bell
Win Top Honors**

NEW YORK, May 7, 1991 — The winners of the Fourth Awards for Achievement in Managing Information Technology were from Drew University, Kennametal, K mart, NASA and Pacific Bell, it was announced tonight at the Waldorf-Astoria. The honorable mentions were from the Los Angeles Unified School District and MCI Telecommunications.

Dr. Rosabeth Moss Kanter, Class of 1960 Professor of Business Administration at Harvard University, and Editor of the *Harvard Business Review*, addressed an audience honoring the winners.

Dr. Kanter spoke about how to nurture the entrepreneurial spirit—the spirit of creative leadership—inside established organizations. “The skills of innovators need to be encouraged at all levels if U.S. companies are to remain competitive,” she noted. “We cannot afford the costs of wasteful bureaucracies that are slow to change, unresponsive to customers, slow to take advantage of new technologies, and bogged down in internal political battles. Organizations of all sizes must become more flexible, more cooperative, and more innovative—taking advantage of ideas generated through the ranks, working better across functional lines, and learning from their allies and venture partners.”

-MORE-

Awards for Achievement in Managing Information Technology

Citing just-released data from the *Harvard Business Review* World Leadership Survey of 12,000 managers in 25 countries, Dr. Kanter contrasted the Japanese emphasis on product innovation as a key success factor with the American emphasis on customer service. "While excellent service is essential," she observed, "it would be a terrible loss if the U.S. gave up on product leadership. Our economy would suffer if we were content with being the best at marketing, distributing, and servicing products made in Japan."

"Several hundred nominations for the Awards were received this year," noted Charles O. Rossotti, Chairman of American Management Systems, Inc. (AMS), which cosponsors the award program with the Graduate School of Industrial Administration of Carnegie Mellon University (GSIA). "These executives honored tonight deserve high praise for bringing key innovation to their organizations," he added.

"As more recognition is given to quality in the business community, it is appropriate that these winners and honorable mentions be singled out here tonight," commented Acting Dean Dennis N. Epple of the Graduate School of Industrial Administration of Carnegie Mellon University. "These individuals have not only made measurable, exciting contributions, but have elevated the overall quality of their organizations," he added.

The nominations were judged based on the individual's leadership roles and the impact of their work on their organization and profession. The eight judges included AMS senior executives, GSIA faculty members, previous award winners, and information technology executives.

The winners are:

- **David M. Carlson, Senior Vice President for Corporate Information Systems, K mart Corporation.** His development of an open systems architecture for store systems helped K mart address the three biggest problems facing retailers: long checkout lines, high inventory costs and cumbersome credit authorization. As a result, customer checkout time has been reduced by 23% and the company has saved more than \$200 million annually.
- **Richard A. Detweiler, Vice President and Professor of Psychology, Drew University.** He has integrated information technology into the liberal arts education at Drew. All students, faculty, and administrators use extensive information libraries, voice and electronic mail, word processing and spreadsheet tools, and computer-based instruction to become better informed and more

productive. Technological literacy is a staple within the Drew community which is enhancing its ability to attract new students and to exert a leadership role within liberal arts education.

- **John F. Muratore, Chief of the Reconfiguration Management Division, NASA, Johnson Space Center.** He upgraded the existing technology at Mission Control with expert systems to aid the decision-making process of flight controllers. In addition to improving NASA's cost effectiveness through the application of his Integrated Communications Officer Expert System Project, Muratore and his team laid the groundwork for future knowledge-based systems at NASA.
- **John W. Turko, Vice President and Director of Management Information Systems, Kennametal Inc.** He orchestrated a turnaround in the company's competitive capabilities by implementing new information systems that changed the company from manufacturing-oriented to customer-focused. The systems have dramatically increased company revenues, customer satisfaction, and Kennametal's world standing in the metalworking industry. Perhaps the most dramatic evidence of this is GM Saturn Corporation's selection of Kennametal to be the sole provider of machine tools and related supplies for its Saturn production facility.
- **C. Diana Whitehead, Executive Director of Marketing Support, Pacific Bell.** She deployed the largest customer service application in the telecommunications industry. The window and workstation-driven network has become a standard for customer service representatives at Pacific Bell. Time required to respond to customer requests has dropped significantly and additional benefits are projected as the platform expands to include another 12,000 Pacific Bell employees who deal with customers.

The honorable mentions are:

- **John K. Nagata, Assistant Superintendent of Information Technology, Los Angeles Unified School District.** He developed and implemented a communications network that links over 600 school facilities, in spite of significant revenue limitations.
- **James L. Zucco, Jr., Senior Vice President, Systems Engineering, MCI Telecommunications Corporation.** He has been instrumental in developing systems support to MCI's growing number of telecommunications products and services.

The winners were presented Steuben Glass sculptures and cash honorariums by Mr. Rossotti and Acting Dean Epple.

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American Management Systems, Inc. (AMS), is one of the nation's leading firms in applying information technology and systems engineering services to solve complex management problems for large organizations. The company, which completed its twenty-first consecutive year of growth, is headquartered in Arlington, Virginia, and has offices in 26 cities throughout the United States, the United Kingdom, continental Europe, and Canada. AMS's revenues for 1990 were \$262 million.

The Graduate School of Industrial Administration is the business school of Carnegie Mellon University in Pittsburgh, Pennsylvania. The school has pioneered the education of future managers in the use of quantitative methods and computer/communications technology. GSIA offers a Masters of Science in Industrial Administration and a Ph.D in Industrial Administration and in Economics.

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FOR IMMEDIATE RELEASE

Contact: Brenda Wheeler
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BACKGROUND

HOW THE WINNERS WERE SELECTED

NEW YORK, May 7, 1991 — The competition for the Fourth Awards for Achievement in Managing Information Technology officially began on May 7, 1990 when over 6,500 letters and nomination forms were sent to the heads of large private and public organizations.

The Awards are cosponsored by American Management Systems, Inc. (AMS) and the Graduate School of Industrial Administration of Carnegie Mellon University (GSIA). First presented in 1987, the Awards are designed to recognize and honor executives and professionals who have made outstanding contributions to their organizations through the effective use of information systems and communications technology.

The call for nominations yielded several hundred responses from FORTUNE 1,000 firms (service and manufacturing); federal agencies; state and local government agencies; colleges and universities; and major hardware vendors.

The nominations were screened to determine the significance of the nominee's achievement and impact on their organizations. A senior executive was required to attest to the stated contribution. The judges defined "impact" as:

- Enhanced management decision-making capabilities.
- Provided competitive advantage (e.g., created new value-added or new markets).

-MORE-

Awards for Achievement in Managing Information Technology

- Delivered major efficiencies (e.g., reduced costs or increased productivity).
- Improved management controls or reduced risks.
- Improved service to clients, managers, professionals, or others with important relationships to the organization.

This screening reduced the original group of nominations to seventeen finalists who moved on to the next level of judging, an in-depth phase of information gathering and review. At this point, the nominators were contacted to elaborate on the nominee's accomplishments and provide further clarification about the nominee's accomplishments. Supporting materials, such as written descriptions or publications of the nominee's work were requested. Where possible, on-site visits were made. It was communicated that a nomination letter signed by the chief executive officer, chief operating officer, or group executive at the nominee's organization would serve as a strong confirmation that the nominee's accomplishments truly had a significant impact.

The final selection of winners by a judging panel took place on February 20, 1991. The panel, selected for their experience in the area of information technology, included:

- **P. William Bane**, Vice President of Strategic Planning Associates, Inc., an international consulting firm which specializes in advising management on corporate strategies.
- **R.W. (Bill) Eaton**, Senior Vice President and Chief Information Officer of Levi Strauss & Co., the world's largest apparel manufacturer. Mr. Eaton was an AMS/GSIA award winner in 1989.
- **Ross C. Kory**, AMS Vice President, responsible for the firm's state and local government and higher education practices.
- **Charles H. Kriebel**, Professor of Industrial Administration at Carnegie Mellon's GSIA, an international lecturer and consultant, and the author of more than eighty published articles and reports.
- **F. Javier Lerch**, Assistant Professor in Information Systems at Carnegie Mellon's GSIA, teaching courses in information resources management and human interface to business computer systems.
- **Carolyn M. McGee**, AMS Vice President, responsible for a major part of the company's systems integration practice.

- **John C. Reece**, Vice President and Chief Information Officer for Alexander & Alexander Services Inc., responsible for the company's worldwide information systems.
- **Michael R. Zucchini**, Executive Vice President and Chief Information Officer of Fleet/Norstar Financial Group. Mr. Zucchini was an AMS/GSIA award winner in 1987, while at General Re Corporation.

The judges reviewed the nominations and supporting material, then rated the finalists on each of five criteria:

1. **Impact on the organization.** How did the achievement affect the mainstream activity of the organization? Where there measurable results? How "in tune" was the system with the strategic direction of management?
2. **Impact on the profession.** Did the achievement represent an exemplary approach that could serve as a model for others? Was there innovative use of computer or communications technology? The practical application of technology rather than its "state-of-the-art" was the primary consideration.
3. **Innovation/Vision.** Had the nominee conceived of the approach undertaken?
4. **Managing the resources.** Were objectives reached in an appropriate timeframe, within budget? What sort of management challenges had to be successfully met?
5. **Leadership in "driving the culture."** How effectively did the individual "sell" the project to senior management, and work to ensure the system's implementation, adoption and success?

The judges agreed that the achievements of each of the five winners revealed exceptional capabilities in at least three of these five dimensions and strong results in all of them.

American Management Systems, Inc. (AMS), headquartered in Arlington, Virginia, is one of the nation's leading firms in applying computer and systems engineering technology to solve complex management problems for large organizations.

Founded in 1949 by prominent management educators Leland Bach, William Cooper, Richard Cyert, and Herbert Simon, the Graduate School of Industrial Administration is the business school of Carnegie Mellon University in Pittsburgh, Pennsylvania.

Keynote Address by

Dr. Rosabeth Moss Kanter

*Class of 1960 Professor of Business Administration,
Harvard University, and Editor of the HARVARD
BUSINESS REVIEW.*

**Nurturing the
Entrepreneurial Spirit
within Established
Organizations**

Presented at

**The Fourth Awards for Achievement
in Managing Information Technology**

Sponsored by

American Management Systems, Inc.

and

**Graduate School of
Industrial Administration,
Carnegie Mellon University**

New York City

May 7, 1991

"Nurturing the Entrepreneurial Spirit Within Large Organizations," was delivered by Dr. Rosabeth Moss Kanter as the keynote address to honor winners of the Fourth Awards for Achievement in Managing Information Technology. The awards, cosponsored by American Management Systems, Inc. and Carnegie Mellon University's Graduate School of Industrial Administration, recognize outstanding contributions made by individuals to their organizations through effective use of computer and communications technology.

The fourth award winners were senior executives with Drew University; Kennametal Inc.; Kmart Corporation; National Aeronautics and Space Administration (NASA), Johnson Space Center; and Pacific Bell. Honorable mentions were senior executives with Los Angeles Unified School District and MCI Telecommunications Corporation.

Previous award winners were senior executives with Albertson's Inc.; Chrysler Corporation; Citicorp; Commonwealth of Virginia, Department of Taxation; Dun & Bradstreet Corporation; Federal Express; Frito-Lay, Inc.; General Re Corporation; Levi Strauss & Co.; Royal Bank of Canada; Security Pacific Corporation; State of New York, Division of Criminal Justice Services; Travelers Insurance; U.S. Department of Justice; and United Technologies Corporation.

Previous honorable mentions were senior executives with Carolina Freight Corporation; Chase Manhattan Bank, N.A.; Chemical Bank; City of Hartford, Connecticut; Deere & Company; Defense Communications Agency; McGraw-Hill, Inc.; Mrs. Fields Cookies; RJR Nabisco, Inc.; United States Air Force Engineering and Services Center; and Waubesa Community College.

The Fifth Awards will be presented in the Fall of 1992.

Good evening, we are gathered here tonight to celebrate the fact that a number of individuals, in a number of companies, have made outstanding contributions to their organizations through the effective use of information technology. I actually wish that we could listen to the award winners tell their stories about how they did it. I'll bet it was fascinating; and I'll bet not straightforward; and I'll bet fraught with all kinds of battles and struggles along the way. Because what they have really done is not only managed information technology, but managed change. And, we all know that change is very difficult, even in organizations that say they want it.

One of my favorite stories about change was articulated by a management theorist that I respect highly, Woody Allen. Woody put it this way in what he called his all purpose commencement speech. He said, "Today as never before in human history, humanity faces a crossroads. One path leads to despair and hopelessness. The other road leads to total oblivion. Let us pray that we have the wisdom to choose the right one."

That is how many people greet the subject of change. I applaud our innovators tonight for overcoming all of the barriers and all of the resistance to change and bringing innovation into their organizations, which is something American industry needs dearly.

I think a number of challenges face Americans today. Some of the challenges have always been with us, and some of them are exacerbated by our current competitive position in the world, by the state of the economy, by the crises of moral leadership in the public sector in many parts of the country.

There are four distinct challenges that face organizations: creativity and innovation, leadership, organization, and people. Tonight I will share my thoughts in terms of how organizations around the country are meeting these challenges.

The Creative and Innovative Challenge

Innovation has been one of the major sources of the United States' competitive advantages. In industries where the United States still dominates world markets, it often dominates because of innovation. Those companies that manage to not only survive but flourish in these very challenging times do it because of innovation. I sometimes worry that we don't emphasize innovation enough, particularly in our products and in our technology, the way that we should in America. Innovation is essential to our success.

The *HARVARD BUSINESS REVIEW* is about to release the findings from a survey we did of business leaders and business managers worldwide in collaboration with 24 different publications in 24 countries. Twelve thousand managers from 24 countries responded to the survey. One of the most striking findings was that when we asked managers to talk about what was the most critical success factor in their business — and they could rate several — the Japanese overwhelmingly chose product development. The Americans overwhelmingly chose customer service.

Now, I am a customer and I believe in customer service. But, I thought that emphasis was really very interesting. It made me worry a little bit. If a survey like this were to predict the future, maybe it would say that our role is to be the shopkeepers of the world, distributing and servicing products that are made in Japan. I

don't think that's our world, and I personally don't want that to be our world.

Innovation is vital. Those companies that manage to flourish, even those in very difficult industries, often do it because of an attitude, a culture, an environment that encourages constant innovation in every field and every function in every part of the organization. One of my favorite examples is an airline company. This airline is well known as one of the companies often cited for innovative use of information systems as a competitive weapon. What makes me admire this airline is the way it uses innovation, not only in information systems and in human resources, but also in marketing to bring us the frequent flyer programs that we all know and love.

The interesting thing about those kinds of innovations is that none of them have to do with the core product or the core service. Rather, they all have to do with everybody throughout the organization — in support functions and ancillary functions—thinking about how they can keep contributing to improve the way the organization does business. Every field, every function can contribute to innovation. I'm very big on the whole idea of the frequent flyer programs because it's a terrific way to build the customer into the innovation process by learning who the customer is and responding to the customer. I think this could be extended nearly everywhere.

I suggested recently to a group of law firm administrators that they might want to consider a "frequent litigators program" to earn points toward the lawsuit of your choice; sue anybody you want to. It was a joke, but just in case it pops up in your community, I wanted to make sure that I got credit.

The striking thing to me about innovation and the companies that are high in innovation is how much they're willing to consider the ridiculous alternatives; how much the culture and the environment allows people to speak out, to imagine possibilities that would be laughed at in more conservative companies.

We all say we want innovation, it's a great thing. I've heard many companies say, "We want more innovation. Who else is doing it?" Or, help us become more innovative. We just don't want to be the first." The fact is, even with technology at the core, an emphasis on innovation means a willingness to embrace the ridiculous, the absurd, the wild idea or the concept that doesn't quite fit the existing framework for how things should be put together.

I once termed the kind of thinking that goes into innovation as "kaleidoscopic thinking." In fact, a friend of mine was quoted using my "kaleidoscopic thinking" term in *THE NEW YORK TIMES* recently. "Kaleidoscopic thinking" is a way of changing the pattern. A kaleidoscope is just an array of fragments: you look through it and the fragments form a pattern. But all you have to do is shake it, twist it, change the angle or change direction and the same fragments form an entirely different pattern. That's what innovators do. They start shaking our conception of the world so that a new pattern and a new view of what's possible starts to emerge.

I was talking with someone about Federal Express, and I remembered my favorite Federal Express story. I used to teach at Yale, and Fred Smith (founder of Federal Express) was an undergraduate at Yale. He first proposed the idea for Federal Express in an economics course at Yale while he was an undergraduate. He got a C in the course because it seemed totally out of the pattern. He was proposing that he would have his own fleet of airplanes to collect mail

from around the country and take it to Memphis, Tennessee, where it would be sorted and routed and delivered by the next morning. A ridiculous idea!

I was with Fred at an executive conference long after Federal Express became a billion dollar company. I offered to take his transcript back to Yale to see if I could get his grade raised to at least a B+, as the idea had worked. Unfortunately, Fred's experience is the common human response to new ideas. "Orville, you will never get me up in one of those things, it will never fly." This may have been the experience of some of the award winners being honored tonight the first time they surfaced with what has become a fabulous idea that we all want to emulate. I find, particularly in companies that seem to produce a constant stream of innovation out of every field and function, that there is a culture that says it's better to be a pioneer and live on the frontier than to keep other peoples' ideas.

That entrepreneurial spirit that says, "it's all right to break the frame" is nurtured in companies where the leadership tries to encourage new ideas and help people break out of constraints and frameworks that are sometimes dictated by the organizational structure itself. "This is your territory, this is my territory, and don't think across boundaries." All innovation by definition cuts across the boundaries we have established, the boxes we have on the organizational charts, or it wouldn't be applicable to more than one area.

My best example of an organization nurturing an entrepreneurial climate is a Silicon Valley company, a high tech chemical company, not a computer company, in which the chief executive was facing the innovation problem. Even though his company had grown very rapidly, he was still very close to its entrepreneurial origins. He was concerned that

you can get to a stage in any organization where the territories have been established and people cling to their boxes and they stop listening to new ideas. They spend most of their time defending last year's actions or last year's plans because they're afraid of losing territory. That's when bureaucratic mind-set starts to set in and innovation begins to decline. This CEO asked himself how he was going to renew the entrepreneurial spirit. He staged what I consider one of the most imaginative executive conferences I have ever heard of — also one of the strangest. But, I did say this was a California story.

He took his top fifty managers to their annual financial review and goal setting meeting. They were in a hotel ballroom, listening to traditional long-winded speeches. He was halfway through his own speech when suddenly the doors burst open and a set of men dressed as prison guards came into the room, grabbed everybody and took them out to a set of helicopters that were sitting nearby. They were then flown to a second meeting site. There the CEO said, "Now we'll begin. I want you to leave behind all your old ideas in the first room. Here I only want new ideas."

You can imagine the silence that descended on the room. If you think about it for a moment, one of the keys to creativity — to unlocking innovation — is to change the structure, change the setting. There are habits and ingrained patterns that develop in any organization in part because people do the same thing, look at the same thing, even take the same seat in meetings where there are no assigned seats.

This CEO did something creative to open the minds of his executives. He continued to punctuate the meeting with surprises that were designed to open people's thinking. One was a

parade of elephants on the beach. I did say this was California. He started talking about his company's planning assumptions, their financial results and along came a small elephant walking down the beach. He continued to challenge his company's assumptions and the elephants kept getting larger and larger. While it was only a gimmick, this elephant story began to take on a life of its own.

During my extended visit to Silicon Valley helping entrepreneurial organizations obtain a little more bureaucratic discipline, I started hearing more elephant stories. I even saw a picture of a CEO of a major technology company sitting on the back of an elephant riding down the main street of Palo Alto with the Stanford Marching Band behind him. I said, "This is kind of interesting. This is the second elephant I've seen out here. Do you have a rent-an-elephant service in Santa Clara County?" And they said, "Yes, Marine World in San Jose rents its animals to local companies." You can imagine how that happened. They're sitting around one day in an asset utilization review meeting deciding what assets they have that are underutilized that could be deployed for revenue enhancement and someone mentioned the animals. The point is, there are business opportunities everywhere for those willing to open their minds.

Why am I standing here from the Harvard Business School telling you silly animal stories? What these stories really illustrate is the culture and the environment of these companies. What was the Silicon Valley like at the time of these stories, five or six years ago? It was the hotbed of innovation; a model for the world. If you think about what creative means and, therefore, what the seeds of innovation are, it's the ability to play with ideas and be irreverent about tradition. Because tradition will hold you back and slow you down. A lot of the large senes-

cent, stagnant bureaucracies I work with are populated by a lot of animals; they are invisible and I call them sacred cows.

I think creativity and innovation is our first challenge. This challenge requires a very different kind of corporate culture than the kind that has been established in organizations that start taking themselves too seriously, that start valuing dignity over ideas, that start valuing discipline or process for its own end rather than valuing experimentation and results.

We are going to be running an article in the July/August issue of *HARVARD BUSINESS REVIEW* that makes the point that one of the reasons some Japanese companies and some industries have a tremendous innovation advantage is because of their willingness to engage in, a constant stream of experiments. "Send it out there and see if the market wants it. Instead of launching the one perfect model, let's launch fifteen variations and see which one the market takes, and that's the one we'll go with." It's a very different attitude, a very different spirit, a very different image about innovation. A major study of the auto industry done by some of my colleagues compared the speed of innovation and product development in European, Japanese and U.S. companies. The Japanese excel when it comes to speed of innovation because they constantly experiment while the United States tends to think in terms of one big project, Saturn, for example. In the time it has taken General Motors to launch Saturn behind schedule, how many models has Honda put on the market? How many improvements have been made because of a spirit that allows one to continuously experiment and push the frontiers.

The Leadership and Communication Challenge

To have that kind of culture we need to meet our second challenge: the leadership challenge. It's a challenge to the people who run organizations to put in place the attitudes, the culture, the organization and the management that will encourage others to take the initiative and to innovate. We often think of innovation as directed from the top. I think of it as directed from the grass roots. In looking at the history of successful innovations in a range of companies it's striking to me how many of them have grass roots origins. Somebody at the middle, or somebody at the lower ranks had a bright idea, began to experiment, sold it upwards and top management then adopted it as their own. But, it was still people at lower levels that came forth with the ideas.

What should leaders do to make it possible for people throughout the ranks of the organization to come forward with their bright ideas? One thing leaders have to do is be very clear and explicit about what the organization stands for, what its goals are, what its values are and what its direction is. Unless people have some guidance and direction as to what kind of ideas and solutions are likely to be acceptable to an organization they will become paralyzed when it comes to innovation. I remember a few years ago trying to make this point at a presentation to a senior group at a major computer company. I talked about the need for leaders to set a focus or a framework before anybody could really innovate properly. And they said, "Why? Why set any constraints? Why set any boundaries?" Here's my discipline point against my creativity point. I said, "You need discipline and creativity." They said, "Well, why? That just restricts the domains for creativity." I said, "You are a computer company,

if somebody comes up with an idea for a better bicycle are you going to make it?" They said, "Yes." That was one of the problems! You can have too much entrepreneurship if any idea is worth pursuing. Leaders have to set the framework and make sure it's understood throughout the ranks, not only for people that innovate in the big sense but also for people who innovate in the small sense.

We are now counting on employees to solve an enormous amount of problems in American companies. That's what quality programs are all about. Today we want people to take initiative to solve problems. To have innovation and problem solving at the grass roots, you need leadership willing to express and communicate to people all through the ranks what the goals are, what the direction is, what the strategy is or they can't help. This has not always been true in large organizations.

One of the most revealing examples of poor communication is a story that was told to me by the chairman of a leading telecommunication corporation in the early '80s. He was just beginning to explore the quality of work-life domain and he described having toured some of the company's telephone factories. He talked about meeting a woman on one of the assembly lines that thought she was making irons. She thought she worked for an electric company. To me, what's funny about this story is not that it happened but that an employee could get away with it.

Pacific Bell, one of the award winners being honored tonight, used to be more process oriented than results oriented. Now, through the effective use of information technology, they have created an environment where their customer service employees can think and solve problems.

The job of leaders is to communicate if we are going to unlock the brain power and the imagination of people throughout the ranks of our organizations. Effective leaders are spending a greater percentage of their time making sure that not only do people know what products they're making — that it's a telephone, not an iron — but also that they understand its priorities, its economics, its customers and the business problem to be solved.

Today the chief executive officer of a telecommunications firm may be spending forty percent of his time in sessions with employees not just talking about their values in the abstract but talking specifically about their business so that everybody at every level understands it and concedes to it. Increasingly, it is the job of leaders to set the framework, to create the themes, to create clear images in people's minds of the priorities so employees can take initiative to innovate or to solve problems.

One of my favorite stories is about banking. It's one of my favorite industries to poke fun at because bankers, to me, were always the essence of "three-piece-suited dignity." If you were in banking you were truly respectable. Stuffy was the other word that came to mind. In any case, this is an example of the new leadership mobilizing an organization to do extraordinary things, some of which involve setting a framework and explaining the priorities to people. The head of retail banking at a major California bank was faced with providing the leadership necessary to mobilize his organization to do extraordinary things, some of which involved information technology. He said, "We have defined our strategy. We at the top know our top priority. Our priority is to be the best consumer lenders. We want to be the best lenders that there are. Now that we know and understand that, how are we going to

communicate that down through the ranks so that we can engage the brain power and talents of everybody in the organization in contributing whatever they can to meeting this overwhelming priority?"

Here's what he did. He didn't call a meeting. He didn't send out a memo. He said, "I have to do something larger than life so that people really embrace this as their priority too." He came into work one morning in downtown Los Angeles on his horse dressed as the "loan-a-ranger." Isn't that about the worst pun you ever heard? He was wearing a mask, he shot a water pistol and he kicked off their "loan-a-ranger" program. This became their top priority and people were mobilized on teams. One of their great "loan-a-ranger" accomplishments was the task force that called themselves "greatest-loans-on-wheels" to do auto loans. They formed a partnership with auto dealers in the area and put their company's terminals in the hands of the auto dealers so the auto dealers could offer instant loans. They advertised together: "Buy your car here; get your financing instantly." It was a tremendous success, and it was employee innovation stimulated by leaders creating a context, a framework in which people could act.

I don't want you to leave here thinking that what they teach at the Harvard Business School is how to do animal acts or dress up in costumes. I just want to tell you one more round of this because I know we in New England don't do those kinds of things; we are much more dignified. A few years ago I was working with one of the leading New England banks that was very concerned about how they were going to get any positive involvement and engagement in making some serious and difficult changes which had to be made. They had a fantastic vision of the future that really did make a great deal of sense, but people were so traumatized by the idea of change and by the

potential job loss and so forth that they couldn't see it. I told the "loan-a-ranger" story. The next thing I know, some senior executive from a large unit of this bank had called and booked an auditorium for an all-employee meeting, and he and his people came in dressed as the California Raisins singing "You-Heard-It-On-The-Grapevine."

We have too many people who think leadership is an intellectual activity, that it's a matter of strategy or that it's a matter of doing the right deals. Really it's a people activity and it's a communication of priorities activity.

The Organization Challenge

That relates to our organization challenge. Too much of our work in too many organizations is done in boxes and slots and territories. It's done by functional departments and not by project teams. It's done within walls. It's done up and down elevators, literally. Every company faces the problem where each department occupies its own territory and considers every other department the enemy. Work is done in linear fashion. Department A does its piece of it, passes it on to Department B, which sends it back for some re-work before they pass it to Department C.

We have organizations that are too territory conscious and not project and results conscious. We need to break down those walls, those boxes, those boundaries. They are being broken down in the best companies. They are being broken down in organizations that want speed and responsiveness and innovation of quality, because the only way to get those things is to work in teams that from day one cut across areas.

That's a major change, but it's a change that I think is long overdue in many organizations. We need the capacity to build organiza-

tions that can work horizontally across areas or can pull together on an informal basis. We need to encourage contributions to solving a problem rather than orientations towards status and hierarchy. A senior executive from one of the leading Baby Bell telecommunications companies told me that within their organization the hierarchy dominated the tasks. Each time they pulled together a task force, which sounds like a great participatory event, each department would look to see that each department had equal representation. If not, they would complain and they would scrutinize the level of the people that were on the team. If the representation was several levels below theirs they would send somebody several levels below them rather than participating themselves. That was the old mentality.

The new mentality is that you pull together the best people for the task. What their status is, where they come from, what their title is doesn't matter as much as what they can contribute to the end product, to the end task. The walls are starting to crumble. The boundaries between territories are starting to crumble and it's long overdue. They have to go. This is also going on in my favorite industry, banking. At several major U.S. banks, managers and senior executives have been seriously considering eliminating titles. As we all know, if you work for a bank and you're not a vice president you're not employed. So the elimination of titles is very serious. Consider the impact of eliminating officers' titles and replacing them with very broad descriptions of responsibilities that are flexible enough that people could move across areas.

I remember the first time I visited a large mutual fund corporation in Boston. I was speaking to some senior people and asked for a business card and one of the people around the table handed me five business cards. He had five different titles or descriptions of responsi-

bilities for five different projects. We need to change our thinking and our assumptions about organizations to get rid of many of the trappings of bureaucracy and hierarchy.

The People Challenge

Our fourth challenge is a people challenge. We do have an education crisis in the United States, not because educational quality has declined — actually, there's a lot of data that says it hasn't — but because relative to our competitors it has declined.

We know that business leaders know this and acknowledge it. In the *HARVARD BUSINESS REVIEW'S* "World Leadership Survey," overwhelmingly, regardless of country, education was the number one social priority for business. Interestingly enough, Americans felt this even more acutely than other countries, because many other countries are doing a better job of educating their students. America used to dominate the world in terms of the number of people who completed twelve years of school. Our competitors now are outdoing us not only in the number of years and the number of people completing twelve years of schooling, but they're learning more in twelve years. It takes twelve years in Japan to learn some of what it takes fourteen years to learn in the United States because of the quality of the system. To have a country whose people think and solve problems, we are going to have to do something about the education crisis.

There's a lot going on at the moment. This is a brief overview of some of the issues that I think are important if we are going to continue to have great achievements like the ones that were recognized and acknowledged tonight. There is no organization I know of that doesn't have some deviant person managing to innovate despite the system, despite the discouragement. We want organizations in which people

don't have to innovate and lead important new developments like this against the grain or despite the system. We want organizations in which people will do it because of the system, because that's what is valued, recognized and rewarded.

Tonight I have shared with you a number of things that I think are important in order to get a climate or a culture that will nurture innovation and have leadership opened to new ideas. I think they're good things to do, and if they're good things to do, I think we can't do enough of them.

I will leave you with a thought from another one of my favorite management theorists, Mae West, who put it this way, "Too much of a good thing can be just wonderful!" Tonight we heard some good things, I think they're wonderful, I'd like to hear more of them in the future.

Thank you.

For further information about the Awards for Achievement in Managing Information Technology, please contact: Mrs. Jan Dodson, American Management Systems, Inc., 1777 North Kent Street, Arlington, Virginia 22209 (703) 841-5830.

Keynote Address by

Admiral Bobby R. Inman

Formerly Chairman and Chief Executive Officer, Westmark Systems Inc.; Chairman and Chief Executive Officer, Microelectronics and Computer Technology Corporation; Deputy Director, Central Intelligence Agency; Director, National Security Agency.

**The Leadership Challenge:
Coming to Grips with a
Changing World**

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"The Leadership Challenge: Coming to Grips with a Changing World," was delivered by Admiral Bobby R. Inman as the keynote address to honor winners of the Third Annual Awards for Achievement in Managing Information Technology. The awards, cosponsored by American Management Systems, Inc. and Carnegie Mellon University's Graduate School of Industrial Administration, recognize outstanding contributions made by individuals to their organizations through effective use of computer and communications technology.

In 1989, the winners were senior executives with Chrysler Corporation, Citicorp, Commonwealth of Virginia Department of Taxation, Levi Strauss & Co., and The Royal Bank of Canada. Honorable mentions were senior executives with Carolina Freight Corporation, United States Air Force Engineering and Services Center, and Waubensee Community College. The awards are presented annually.

The 1988 winners were senior executives with The Dun & Bradstreet Corporation, Frito-Lay, Otis Elevator Company, Security Pacific Corporation, and the United States Department of Justice. Honorable mentions were senior executives with the City of Hartford, Connecticut, Mrs. Fields Cookies, and RJR Nabisco, Inc.

In 1987, the First Annual Award winners were senior executives with Albertson's, Inc., Federal Express Corporation, General Re Corporation, State of New York Division of Criminal Justice Services, and The Travelers Companies. Honorable mentions were senior executives with the Chase Manhattan Bank, N.A., Chemical Bank, Deere & Company, Federal Defense Communications Agency, and McGraw-Hill, Inc.

I had a brief moment earlier this evening to reflect with someone who shared some experiences earlier in my life. While I had worked around technology, and been an avid user for much of my life, it was the almost four years I spent as the Director of the National Security Agency that really brought me to focus on the value of managing information technology—in that case, for this country's long term national security.

You'll understand how some of those experiences shape the thoughts I want to share with you tonight. When I was a youngster doing my BA in liberal arts, the world was taking shape after a global conflict for what has been 40 plus years of global stability.

There have been some high waves along that process, but we put in place political and military alliances that serve as the framework for what has been a remarkably long period of global stability. We were the preponderant military power.

In the last several months, modern information technology has led us all to understand inescapably that this world is changing at an incredibly fast pace.

Let me take you back to one week—28 May to 3 June—for what one aspect of modern information technology brought us. As we watched on our TV screens in Japan a political crisis; suddenly there on television a prime minister was falling because of his relationships with geishas. That was truly a sea change in attitudes brought home—telling us that there are a lot of changes coming up in Japan.

That was just the tip of the iceberg—there are new standards, new approaches, and there will be an impact on Japan in the years ahead.

Food riots in Argentina that same week.

Images of what ought to be one of the wealthiest countries on the face of this globe. Khomeini had died, and we saw the incredible scenes of the mobs grabbing for remnants from the corpse and the helicopter having to fetch it away, harking memories for those who looked at the artists' depictions of the anti-Christ back in the 1500's of our modern image of the same.

President Bush in Europe. All the media had been saying he was too cautious, nothing happening—and he announced the first significant withdrawal of U.S. troops since NATO had been put together 40 years before.

Elections in Poland, bringing Solidarity to power. Only eight years before Solidarity had been sequestered and the army moved to political sharing of power. Or, in Moscow—and forgive me if this is of more interest to me than it may be to most of you—the images of Soviets clustered around TV screens watching the Supreme Soviet interrogating the head of the KGB about events over the previous 30 years.

And that was also the week of Tiananmen Square. I knew when I saw the Goddess of Liberty that they were in deep trouble. Well, then we actually saw much of the impact of the crushing.

Fast forward to the week of 12 November, and a wall being cut and an East German soldier at an opening, shaking hands with a West German policeman. Now, modern information technology has let us all have a sense of the speed with which this world is changing. I must tell you—I'm a little uneasy about it because what's been sort of the standard for me for the last 40 years is changing very fast.

Let me suggest to you that the same pace of change is taking place in business. And we don't begin to understand yet the pace at which that is occurring.

Go back that same 40 years. The U.S. wasn't just the political and military colossus—we were the only great economic power left after the devastation of a global conflict. We helped put in place the recovery of economies of both friends and foes, and the results have been far more successful than we'd ever imagined.

Sadly, as you look at it—the ones who got left out, who weren't either friends or foes, are the ones who are still trailing in this process substantially.

You got some glimpses tonight of that pace of change. I used to be a taxpayer in Virginia. The fact that you can get a refund in five days instead of 8-10 weeks, thanks to Jane Bailey, is for me a marvelous event.

The dramatic growth in profits for Levi Strauss in spite of a leveraged buyout, with thanks to Bill Eaton and his LeviLink. Paul Glaser overriding the skeptics, and selling installation of the automated teller machines, which gave Citibank a vast edge over consumer banking in New York.

Jim Grant fostering a whole new credo about information handling at The Royal Bank of Canada—laying the foundation for spectacular growth.

And to Nick Simonds of Chrysler who found a way to cope with a declining education system—the reality that more and more of the youngsters we're producing to go work as auto mechanics drastically need the support of things like the Service Bay Diagnostic System if they're going to cope.

In looking at what's happening in this world, the U.S. is still the world's largest economy. But come 1992-94 when the internal barriers go down in Europe, that at least for awhile becomes the world's largest market.

If we're smart and we move in a very dedicated way to bring Mexico into the new U.S.- Canada free trade area, we may well be able to again be the largest market in the world and find a solution that says, "this is where you want to do business; don't turn to conflicts and barriers."

The common feature in the awards tonight and for those three very important Honorable Mentions, is leadership, in this case not in creating technology, but in applying it.

In that process, new technology is created. But the great genius here is in looking at what's happening, recognizing a need and moving with speed and dedication to find an application that will solve needs and produce profits.

I suspect if we were to poll all of those who are here getting awards, there would be one common response—that their success was possible because of the leadership of the entity in which they served. They had support from the level of the CEO, the commissioner, the chief operating officers, executive vice presidents—to go try a new application of information technology to solve problems.

Because what we're really dealing with here in most cases is changing cultures. I can tell you from having tried both in government and in the private sector that it is extraordinarily difficult to bring about a change of culture. And it is mandatory that there be leadership from the top of the organizations willing to try, to support efforts, and to plan new approaches.

In the world ahead of us, the pace of change is going to accelerate, not slow. But the marketplace out ahead, inextricably, is an international one. And that's going to be as large a cultural change for this country as the application of modern information technology.

Either we adapt or we see a declining standard of living. Over the last six years, this great economy has created an aggregate number of 8.8 million new jobs. That's dazzling for any economy. But look a little closer at those numbers.

In reality, we've created 10.4 million new jobs in what we loosely call "the service sector." In that same time frame, we lost 1.2 million jobs in manufacturing and 400,000 in mining. Of the 1.6 million jobs lost, the average weekly wage was \$444.

For the 10.4 million new jobs created, the average weekly wage is \$272. Even accepting that U.S. workers may have been overpaid relative to their accomplishments at the \$444 level—the reality is stark. That for a substantial number of our working citizens, their standard of living is already declining.

But that has been obscured by a separate reality that in many cases where there are two adults in the household, both are working. So the overall purchasing power of the household has not slipped visibly for much of the country.

What do we need, looking out ahead to compete effectively as a country in that international marketplace? You can come up with your own list. Let me tick off mine, and it evolves constantly.

We need reliable sources of capital at competitive rates. We cannot over the long term build a successful manufacturing base or produce services that are competitive when we're paying twice the interest rates of those of our principal competitors, even if we're much more efficient at applying it.

We have to have a skilled and motivated work force. Education really is the front line of this ability to compete. We have to have a very

strong base of science, and be constantly pushing the frontiers of creating new technology—and innovation in the use of that technology.

If we're going to be able to maintain a standard of living, we must have steadily increasing productivity, not declining productivity and we must have an unrelenting focus on quality.

Three and a half years ago, we frequently heard that the reason U.S. industry couldn't compete in the international marketplace was the cost of the dollar. The dollar was talked down; in fact, there was a period when we really worried—was there a floor?

Now for the last 6-8 months, it's begun coming back—perhaps more than it ought to. But against the yen and the mark, the drop has been truly spectacular. Yet, when you look at the trade statistics, the trade balance with Japan and West Germany continues to be extraordinarily unfavorable.

You may have a different answer. Mine is that U.S. consumers have made the decision to vote with their pocketbook for products that they judge to be of better quality without regard to price.

If I'm even close to right, how do we sustain our arrogance that it's the responsibility of other countries to open up their doors for U.S. products if the U.S. consumer is already making a judgment to prefer the foreign product?

Until we restore both the perception and the reality that the quality of U.S. products is second to none, we're going to have great difficulty ever turning the trade balance, no matter what we do in twisting arms in the international arena.

And I could go on and on. Safety and environment. But the point I want to make here

is that in almost all these areas where we clearly need to make dramatic progress here in the U.S. to insure a successful economy, effective use of information technology is absolutely essential.

We won't find the productivity levels that we need without it. We won't get the unrelenting focus on quality without it. Indeed, it supports us in our ability to find the new avenues to proceed for innovation.

We have a longer term problem related to leadership. If you look back over the history of the republic, we do have a pretty remarkable record for true leaders evolving when crisis confronts us.

Whether it was the group of settlers who came together and wrote a Declaration of Independence, and ultimately a Constitution or coping with a civil war, or to global conflicts or to dealing with the Great Depression.

We have clearly been able to produce leaders in crisis. The issue I pose for you is—can we produce leaders in a non-crisis atmosphere? Can we produce the leaders to help us adapt modern information technology to the whole array of challenges, to accelerate the pace with which we not only build an economy, but insure that we sustain a standard of living?

We must produce and reward leadership that can create and maintain a culture which adapts to change effectively and quickly.

Here tonight, you've recognized eight people who have provided leadership. We need most of all 800,000 who can do that. But we also need at the head of the organizations superb leaders who understand the challenge and who will provide the support that's critical for the accomplishments that must be made.

Thank you very much for your time and attention.

QUESTION/ANSWER SESSION:

Q: Your dedication to education is probably the best example of what you believe we need in the future—but how do we leverage that?

A: Let me suggest that you think about education in six different tiers. The pre-school; K thru 12; training and retraining for those coming into the work force to give them the precise skills in a much shorter time frame and retrain the six to eight times they will change jobs; baccalaureate degrees, much more breadth, cultural studies, language studies for the engineers and scientists; more math and science for the liberal arts and business graduates.

Graduate studies, a critical need for more grant aid for graduate students, and the sixth one on my list is continuing education. The reality that in this pace of change, that the brightest youngsters we're now producing five years, six years out, are going to begin to get out of date—unless we can deliver updated knowledge to them at the workplace.

Then take that and turn in a different direction, and say who ought to lead and who ought to fund? There, my judgment, the pre-school, that's because it's so intermingled with health, that's a federal government responsibility to provide the leadership.

K thru 12 is going to primarily be state and local. Training, retraining, very much local, state—with occasional demonstration support from the federal. The bachelors degree—a mix of support, depending on whether it's private or public—roles across the board, but again, it will largely be individuals, corporations, foundations and the state and localities.

Graduate programs. There again I think you shift back to a major role for the federal government, particularly in grants for graduate studies.

Continuing education is sort of a partnership; the federal government clearly needs to provide demonstration models on the use of technology. It's not original here. I listened a few months ago to someone say that if President Lincoln were to be reincarnated and appear, he would be absolutely dazzled in the changes in almost everything—except education, where the process would still be one with which he would be very familiar.

Now there's a little license in that process, but not a lot; we have not begun to apply effectively modern information technology to the learning process. You can find examples.

Our Air Force major worked on a different problem, but some of his earlier colleagues confronted an equally complex problem back in the early 1970's when we decided to embark on an all volunteer force.

Up to that point in time, the Air Force had gotten the bright high school graduates who were avoiding being drafted; the rest of us had to scramble. Suddenly they were in the soup with all the rest of us—and they were taking people with high school diplomas who were barely literate, or not literate at all.

And they turned to computer aided instruction early on to take those barely literate high school graduates and turn them into first rate aircraft engine mechanics.

They created a whole field of technology which is not yet largely assimilated out into the civilian economy where it is critically needed. So there is another whole parallel issue on this education process, technology transfer and application to wide variety.

One last note and I'll get off this answer. When I began to get intrigued with this issue, I went to some of my esteemed colleagues in the computer science faculties and said, "what are you doing about this?" and they looked at me disdainfully and said they were working on really important matters like artificial intelligence and parallel processing, and it was the responsibility of the college of education to work on that application.

Well, the problem is that colleges of education don't have the talent or experience to do it; we may have to create centers that reach across academic barriers. But it certainly isn't happening around most of the country in a way that offers the process; nor do I find the federal government moving to fund the demonstrations.

I don't want to create a big research organization in the Department of Education. My government experience tells me it'd likely be ineffective, at best. But I would sure like to see the National Science Foundation as a companion putting some money on that topic.

Q: On the topic of technology consortia, how would you evaluate their chances of success, in light of the lack of participation of some leading companies?

A: Tell me what consortia Apple has ever joined, tell me what consortia Unisys has ever joined. So what you're seeing there is a culture inside a company not to be a participant.

Look instead at the dramatic change. At the time MCC (Microelectronics and Computer Technology Corporation) came along, IBM was afraid to touch it; I think very legitimately, due to anti-trust issues. Now if you look at both Sematech and U.S. Memories, IBM is a leader in the process.

The culture of a company is changing in this case to deal with it; culture hasn't changed at Unisys or at Apple, so I'm not at all surprised that they have not elected to play.

So I don't think we ought to read that as the decision. A lot of companies aren't going to elect to join. I still feel somewhat constrained, not to be too specific in identifying the performance of even those who do join.

In my experience at MCC we started off planning to have 10 or 12. It sort of caught on almost like a fad, we went to 21. Four of those 21, from my vantage point, were superlative in tracking what was happening and beginning to think how would they use the results.

One succeeded by bringing in engineers; another by participation from the top down; the other two through large parallel research programs.

After my four years, the others were still waiting around for someone to bring them a big box with a red ribbon around it saying this was something they ought to use.

And so, a consortia in some ways isn't that much different from the research structure inside a corporation. You're then again back to the culture inside the company reaching out to use new things: dealing with change, focusing on how to deal with the cost of change and not just sustaining the long term cost of production.

So I remain very enthusiastic about U.S. Memories. It's got some rocky roads. They've got a good legal opinion that says they don't need anti-trust change—we had the exact same thing when we started MCC. I sure did feel a lot better when we got the National Cooperative Research Act 18 months later, and I think there will ultimately need to be some anti-trust variations to remove the ambiguities.

I suspect, with some of the companies that are staying out on the sidelines about U.S. Memories, their in-house legal counsel probably do have some concerns about whether there is a potential hazard in the process.

But the reality is that the cost of putting in place modern manufacturing technology is such that there aren't all that many corporations that can afford to undertake that cost.

We're already at a point where it is entirely conceivable to put in place a facility that could even undertake operations for different participants, because that's largely a software problem to adapt how you're going to change the use on any given day and to get much more use out of a very expensive investment that will change.

Q: At the risk of changing the subject, I'd like to turn your attention to the impact of events in East Germany and the entire Eastern bloc. How do you interpret these countries' reaction to this phenomenal change in military and Communist government?

A: I've been preaching to you for a half hour now about dealing with the pace of change, and now I'm going to say I'm worried about the pace of change here. That in this case, I worry that it's so fast, because if it gets to chaos, and particularly in countries that have a long history of chaos, the tendency to resort to brutal force pretty clearly is there.

My sense as a total outsider simply watching and tracking by the media is that during the transition and the early stages of the administration, President Bush and his principal advisors were preoccupied with the view that the economy was steadily getting worse in Russia, and therefore, Gorbachev may well not make it and they shouldn't get so close that they'd have difficulty dealing with a successor—keep the options open.

After the trip to Poland and Hungary, my sense from a distance is that the view changed dramatically; that the changes then occurring would never have occurred had it not been for Gorbachev and his loosening the reins and changing the rules on what was tolerable.

And therefore, suddenly a very different agenda was at work. What could one do to facilitate this pace of change—but wisely recognizing that we cannot direct it, we can't guide it. It's going to happen internally.

We had Solidarity in Poland, which in fact had announced in '80 that they wanted to be a political entity; that's partly why they got crushed. But they stayed alive as an organization, and when the wheel went around they were ready to provide a clear political alternative at the polls.

In Hungary, the party had evolved in a very different line, and the party itself shifted what it called itself, and they broadened out—we have yet to be sure that it will be sustained.

My worry in East Germany is where is the nucleus to provide a broadened political leadership? We know that the Protestant churches have been out front for some months now in speaking about the need for change, and the Catholic church joined them not long after.

The combination of those is perfect, but I'm uneasy about how that translates into a broadened representation. My sense is that Mr. Krenz has presided over this dramatic change, but he is most remembered by East Germans as the progeny of the former leader. He was after all, for many years his protege. He was the one who cracked down when he was head of Interior on some of the earlier demonstrations.

What is really remarkable as you stand back and look at these events as compared to

what we watched in '53, '56, on—where are the tanks? That's the big change. Why is the military sitting on the sidelines? I don't have a good answer for you.

But I'm fascinated by that fact, that they aren't there, which leads me to wonder—have they conveyed a message that they don't wish to be employed, to be used in a crackdown? And therefore, the political leadership has found that they have had to accommodate to the change because the prospect of dealing as they have in the past was not there.

I don't know whether there's any basis in fact for that, but I am fascinated that the tanks are not there.

Let me go back to the Soviet Union because I think this ultimately drives what is possible.

Andropov was a man way ahead of his time. He was a brilliant young member of the party. He went out to Hungary as ambassador and presided over the crackdown in 1956. The party was so pleased with his performance, that he came back to head the relationships with all of the governing Communist parties.

And then not long after they retired Khrushchev when they were critically worried about the KGB's capacity—not only dealing with internal security problems, but with the external world that was changing. He went off to the KGB, stayed there 15 years, and went back to head the ideological part of the Secretariat. He's the guy who spotted Gorbachev.

You go down the current Politburo and almost every one of them are people Andropov spotted over the years and earmarked for a fast track. Interesting, had he lived longer, what his own reign might have been like. They're pretty

cohesive as a group. The new head of the KGB went there from the central party Secretariat with Andropov in '67, the first time he ever set foot inside the place. Very close to Gorbachev—so the internal security mechanisms clearly are very responsive to it.

Military—a little different status. They've clearly pulled up leadership that is non-threatening. One of the current jokes that was playing before Defense Minister Yasov came for his visit was that he'd gone to a plastic surgeon asking that a birth mark be placed on his forehead. And the plastic surgeon said, "But Mr. Minister, I have people coming in every day who want them removed—why do you want one there?"

And he said, "Well, when I go in to talk to the General Secretary, he says to me, Yasov, there is something missing up there!"

The leadership there is clearly not a threat at this point. And they can live with the Cossacks and the Armenians and the Baltic Republics and Georgians demonstrating and rioting. They could not live with riots on the Ukraine.

So as you watch the tube—if you see riots and major demonstrations for separatism in the Ukraine, then Gorbachev's days may be numbered; and indeed out of panic, a very harsh crackdown militarily.

There is yet a different scenario I happen to think may be more likely. As the economy gets steadily worse his popularity inside the Soviet Union goes down—and it has gone down this year from the Soviets I've talked to perceptibly; 67 percent when the Supreme Soviet started down to 60 percent when it was over, and it's because of the worsening state of the economy.

And it's beginning to be personified on Gorbachev himself. While he was getting 90 percent ratings in West Germany and 85 percent in France.

This is the smartest leader, the best educated leader and certainly one of the smartest they've ever had. I still have some quandary—and he's also the first lawyer. Where that ends up taking them—and us—remains to be seen.

It might not be who after Gorbachev, it may be if he decides this whole process is not going to work that he leads it in an opposite direction. He critically needs investment. Events in Eastern Europe clearly are going to tug at the purse strings of the West. Whether that also opens up purse strings that he critically needs, time will tell.

I think he must see that as a possibility. The harder issue is what happens on the military infrastructure and the alliances. And there, take seriously what you've seen this week again on the tube—but with one cautionary note, and that's about German reunification.

I have a graduate course I teach at the University of Texas-Austin, and I have two bright young French students in graduate business school. They both wanted to talk immediately about reunification and what it would do to both NATO and the common market.

Well, you have to be sure that those same worries are much, much heavier in Moscow. And what would upset the whole process very quickly would be something that would say East Germany would come out of the Warsaw Pact for any kind of reunification. That is truly taking change faster than it could be accommodated.

Time to let you escape! Thank you very much.

For further information about the Awards for Achievement in Managing Information Technology, please contact: Mrs. Jan Dodson, American Management Systems, Inc., 1777 North Kent Street, Arlington, Virginia 22209 (703) 841-5830.

Keynote Address by

Walter B. Wriston

*Former Chairman and Chief Executive Officer,
Citicorp*

Management and the Information Society

Presented at

**The First Annual
Awards for Achievement
in Managing Information Technology**

Sponsored by

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and

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Industrial Administration,
Carnegie Mellon University**

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May 19, 1987

"Management and the Information Society," was delivered by Walter B. Wriston as the keynote address to honor winners of the First Annual Awards for Achievement in Managing Information Technology. The awards, cosponsored by American Management Systems, Inc. and Carnegie Mellon University's Graduate School of Industrial Administration, recognize outstanding contributions made by individuals to their organizations through effective use of computer and communications technology.

In 1987, the winners were senior executives with Albertson's, Inc., Federal Express Corporation, General Re Corporation, State of New York Division of Criminal Justice Services, and The Travelers Companies. Honorable mentions were senior executives with the Chase Manhattan Bank, N.A., Chemical Bank, Deere & Company, Federal Defense Communications Agency, and McGraw-Hill, Inc. The awards will be presented annually.

Recently the New York Times carried a story about a videotape that was circulating in Moscow showing Mrs. Gorbachev using her credit card to purchase expensive jewelry and clothes in Paris. Since videotapes and VCRs are so common in the United States, probably few of us stopped to think of the immense consequences that might follow from opening up such an uncensored channel of communication, not only deep in the heart of Russia, but in this instance relating to the wife of the General Secretary himself. Since closed societies rely heavily on the tight control of information flows to stay in power, this unusual breach of censorship has implications far beyond the incident itself.

A short time before this, on the other side of the world, those familiar with events leading to the fall of Marcos in the Philippines relate that the biggest selling videotape in Manila was an uncensored film of the assassination of Aquino. No matter what the official story was, the TV screens presented a vivid picture of that tragic event.

There is a certain irony in the fact that the most modern technology is being skillfully used to impact the political direction of some of the least advanced societies. A study of this new phenomenon by the Ganleys at Harvard concludes that: "videocassette users are following in the footsteps of audiocassettes, which were an integral and essential tool for fomenting and carrying out Ayatollah Khomeini's Iranian Islamic revolution." If the power of information, delivered electronically, can have this big effect on world politics, and on the conduct and management of foreign policy, and it certainly can, it is time to think about what it can do and is doing to business.

It is not too far from the truth to say that the very concept of society's capital base is in

the process of changing once again. The skills of the hunter, which gave way to those of the farmer and the miner, are now moving toward those who master information. The shift from an industrial to an information society impacts not only the types and quality of jobs, but also the value of raw materials, the importance of geographical locations, and the nature of business and politics. Will a few pounds of common sand in a microchip or fiber optic cable replace tons of copper with a consequent effect on the world-wide mining business? Will the mobility of capital moving across borders with the speed of light impact forever the concept of national sovereignty? These, and many more questions crowd in on us if we have the courage to face them.

Although some would like to slow the pace of change, technology will not stand still. Perhaps Arthur Clarke said it best: "Anything that is theoretically possible will be achieved in practice, no matter what the technical difficulties, if it is desired greatly enough."

Fundamental changes in society always make political and business power structures uneasy. History teaches that these fears are well founded. The growing power of the merchant class helped break the power of the feudal system. The decline of the landed gentry's power in the face of industrialization is well documented. As economic dominance moved from one sector of the economy to another, political power tends to follow over time. The power structure's first reaction to such shifts is to ignore or belittle them, then comes a grudging acceptance, and, eventually, a shift of political power which is apparent to all. The advent of the information society is following this well-worn path, albeit with its own twists and turns. This new economic age is being both driven and led by technology. It should come as no surprise that the massive changes pro-

duced by the use of technology are not always welcomed by corporate managers or political leaders.

Many business leaders feel an acute sense of unease around technology that they cannot fully understand. This is an understandable reaction, but sometimes they let that sentiment influence their judgment about what information systems can do for their business. Those managers should take heart from an experience of a programmer, Richard Block, who worked with the legendary Harvard Mark I computer during World War II. One day the distinguished Dr. Von Neumann, who is generally credited with the concept of stored programs for computers, came to Cambridge on a government mission to calculate the effect an atom bomb might have on a given area. The programmer asked Dr. Von Neumann if he would like to know how the Mark I computer worked. He was told, "No." What Dr. Von Neumann wanted was the solution to his equations. Businessmen and women similarly want answers to their questions — the technology itself can be invisible and serve only to implement a business purpose. Sometimes, however, information technology can have a profound effect on the nature of business itself. In order to capitalize on new business opportunities, it is important that senior management see information in a strategic context, something that may well determine the future of their corporation, rather than as an operating process to be contained within some technical department. The difference is vital.

Information technology can and does change not only the way we do things, but perhaps, more importantly, what we do. Automating yesterday does not produce tomorrow's products, although sometimes it will suggest what they might be. Computerized airline reservation systems are a case in point. American

Airlines Sabre system, by getting there first with the most enhancements, captured the lion's share of travel agents' computerized reservation business. But American went further. It built a data base of frequent flyers and used that information to develop not only marketing strategies, but also new products. The hundreds of millions of dollars and the many years it took to build the Sabre system created a competitive business advantage that will be hard to duplicate.

In another field, J.C. Penney has achieved one of the truly remarkable uses of information technology to let the company do more business in a better way in more places. Everyone who ever tried to sell anything knows that the closer one gets to the customer, the better one's information is about the consumer's likes and dislikes. In the ideal world of management text books, store managers who know the community in which their stores are located should pick out the merchandise assortments most pleasing to local tastes. If their judgments are correct, sales increase, markdown decreases, and profits rise. The problem has been to maintain the leverage of the huge buying power of a central office, while at the same time letting store managers make merchandise selections. Penney built a direct broadcast telecommunication system that links all their stores. The system can and is used for inventory control, reorders, accounting and all the standard business purposes. But that is only the beginning. Currently store managers gather in centers fairly close to their stores to view a television screen on which appears the latest merchandise picked out by the buyers in New York. Standing in a Penney TV studio on Sixth Avenue, the buyer displays a dress, or sweater or other items, describes the material, the price and delivery times, and in effect, asks for orders. The enthusiasm, or lack thereof, for an item reflects each store mana-

ger's assessment of his or her marketplace. Heavy sweaters may be hot items in Minneapolis but of little interest in Houston. The order system itself is basically paperless and a vast simplification of the old many layered process. From a management point of view, the store manager can no longer excuse substandard store results by complaining that some buyer sent out a poor merchandise assortment that had little appeal in his or her particular marketplace. Today managers can be held accountable, while at the same time each store benefits from the mass buying power of the central office. Technology has permitted a widely dispersed organization with about 1,400 stores to follow customer-driven business practice, and gain a very real business advantage.

Whenever some company gets out in front, there are always competitors whose managements will adopt a wait-and-see attitude. The arguments are familiar. Why spend the money now? Perhaps the competitor may fail in his efforts, but even if successful, we can simply copy them. Let the other companies break trail and we will learn from their mistakes. The trouble with that strategy is that the time needed to bring up major new systems in today's world is no longer measured in months, but in years, and the capital required not in millions, but hundreds of millions of dollars. In the meantime, the world does not stand still and people playing catch-up are pursuing a moving target that they may never catch.

Since one of the basic laws of technology is the law of convergence, it comes as no surprise that electronic systems tend to move many once disparate businesses closer together. Indeed, many different types of service may now be delivered over the same computer terminal. As services proliferate, new competitors appear. Company executives who focus their attention on traditional old competitors

may well overlook, or fail to recognize, formidable new entrants in their market. It follows from this that in today's world, the executive who limits his or her information to narrow areas may wake up too late to save the business. Examples abound. Since all good businesses are customer driven, it should be clear that businesses that are in direct touch with consumers, whether at the check-out counter of a retailer or on an airline reservation system, have a comparative advantage over those that are not. It was not hard ten years ago to predict that retailers would become effective competitors of banks in the 1970s and '80s, yet many bankers refused even to consider this possibility. Today this once heretical view is conventional wisdom, but in the meantime, many banks have lost market share to companies they did not believe were their competitors. As marketing becomes more sophisticated, we are learning that there are all kinds of shares, from share of market to share of mind. Today, there may well be a new measure: share of desk. The placing of your terminal on a customer's desk alters the competitive business balance whether that terminal delivers electronic information about the world markets, a letter of credit, or helps a drugstore keep track of inventory. A terminal helps tie a customer to a single supplier to the obvious detriment of other suppliers. It is a short step from using a retailer's electronic telecommunication system for store inventory control to starting a travel service, an airline reservation system, or credit card processing for a chain of gas stations.

All of this argues for the widest possible focus on the information a modern executive needs. Most management information systems that exist today are too narrowly focused on one's own company. They are good for measuring a steady state of business, but often fail to tell us what we need to know to survive and prosper in rapidly changing markets. The vari-

ables your system throws up may not be the variables that are important in changing markets, and, indeed, may even limit what you know. Jack Kilby who, along with Robert Noyce, has been credited with inventing the integrated circuit is quoted by T. R. Reid as saying: "At first, the problem solver has to look things over with a wide-angle lens, hunting down every fact that might conceivably be related to some kind of solution. This involves extensive reading, including all the obvious technical literature but also a broad range of other publications — books, broadsides, newspapers, magazines, speeches, catalogues, whatever happens in view." All of this should make it clear that internal MIS systems must be integrated with external market data if they are to be really useful in a rapidly changing environment. Trying to keep track of who your competitors are is almost a full-time job, but tracking not only what they are doing but what they are likely to do is becoming critical.

In addition to products and services, and how they are delivered, technology is also having an impact on management structures. Most successful businesses have already passed through the period where automation has taken the hard costs out of a given operation and managements are now looking at reducing soft costs. For years, corporations have emulated the old military model, the hierarchical structure. Today that model is being discarded, and structures are beginning to flatten out. As corporate restructuring takes place around information flows, layers of management are being eliminated. The occupants of the boxes in the organizational charts that are disappearing are not people who were actually running businesses, but rather layers of management that were reporting, or relaying information to others. A modern electronic information system can do the job these people used to do faster and, in many cases, more effec-

tively. This process is neither easy or free from pain. The people who remain in the organization bear a heavy responsibility, and, indeed, the nature of the jobs which remain is altered. With his usual insight, Peter Drucker describes the information based system as resembling a "symphony orchestra." "All instruments play the same score. But each plays a different part. They play together, but they rarely play in unison... In the orchestra... the score is given, to both players and conductor. In business the score is being written as it is being played... Management by objectives and self-control is ... the integration principle of the information based structure."

It is not always easy to get an organization to accept the changes necessary to get this teamwork going. It can be argued that some, if not many, of the problems of bringing everyone in a corporation to embrace change are caused by using a vocabulary that no longer describes the world in which we live. In our country, the national income accounts that are supposed to tell us how the economy is functioning — and once did — are now out of date. The same is true of standard industrial codes. Of the twelve major code divisions, only two reflect the service industry, although about 80% of Americans work in a service business. Our accounting standards in business evidence much the same mind set.

Many of the accounting concepts and rules that have been developed over time are designed to reflect businesses operating in the industrial age. Against this background it is understandable that assets recorded on balance sheets tend to be something that you and I can feel and touch, like a building or a machine tool. Intellectual capital tends to be expensed, since it is not regarded as a "real" asset, while physical capital tends to be capitalized. The magnitude of the distortion produced by these

accounting systems can be suggested by the fact that in the last five years IBM alone had revenues from selling software totaling almost \$17 billion, and this number does not include any development expenses. This \$17 billion along with billions more produced by other vendors has almost disappeared completely into thin air. It appears on nobody's balance sheet. Certainly it is prudent to question whether or not this accounting treatment truly reflects the strength of American business. It is almost beyond argument that many businesses would collapse if the software were not present to keep their systems running. On the other hand, the last few years have demonstrated that a great many corporations can get along very nicely without some of their "real" balance sheet assets. If today's software suddenly really disappeared, factories would stop running, accounting and payroll systems would cease to function, all telephone switches would freeze, airlines would stop flying and the economy would grind to a halt. It is hard to imagine such a vital business asset being virtually unrecorded anywhere — but that is the case. The Financial Accounting Standards Board has struggled mightily in its conceptual statement to define an asset. One of the parts of the definition is that an asset is something which will contribute to future net cash flows. Certainly software should fall into this category, and FASB-85 has begun to address the problem in a gingerly way. To suggest that accounting should reflect business reality is often met with the charge that people would play games with the numbers, earnings would be distorted, and balance sheets might become less reliable. All these dangers exist, but they are not a valid excuse for failing to face the reality of the information society.

All of this argues that the impact of information technology on our corporations, our nation, and on our world may be as important

as previous massive shifts in energy sources have been. Human and animal muscles gave way to wind and water power, succeeded by coal, oil and atomic power — each transition had immense consequences for business and for society. Information is having a not dissimilar effect, but in its own unique way. While information is becoming an ever more valuable and pervasive resource, it is simultaneously becoming easier and faster to distribute widely. It is far too early to say that the age of the fixed work place is over, but in thinking about the future of our business, we, at least, must take this possibility into consideration.

Since no one can predict the future with any accuracy, if we want our business to survive and prosper, we have to structure our corporations to permit the entrepreneurial spirit to flourish. We have to organize our companies around the flow of information rather than the old military model. We have to open our minds to the possibility that what we “know” now may be wrong. We have to be receptive to new knowledge. Many years ago Alfred North Whitehead put it this way: “The rate of progress is such that an individual will be called on to face novel situations which find no parallel in the past. The fixed person for fixed duties, who in older societies was such a godsend, in the future will be a public danger.”

If we don't want to become a “public danger,” we have to foster a corporate climate of innovation, the willingness to take risks, and a management that has a very clear understanding that the information age really is different from the industrial society we have all known in the past.

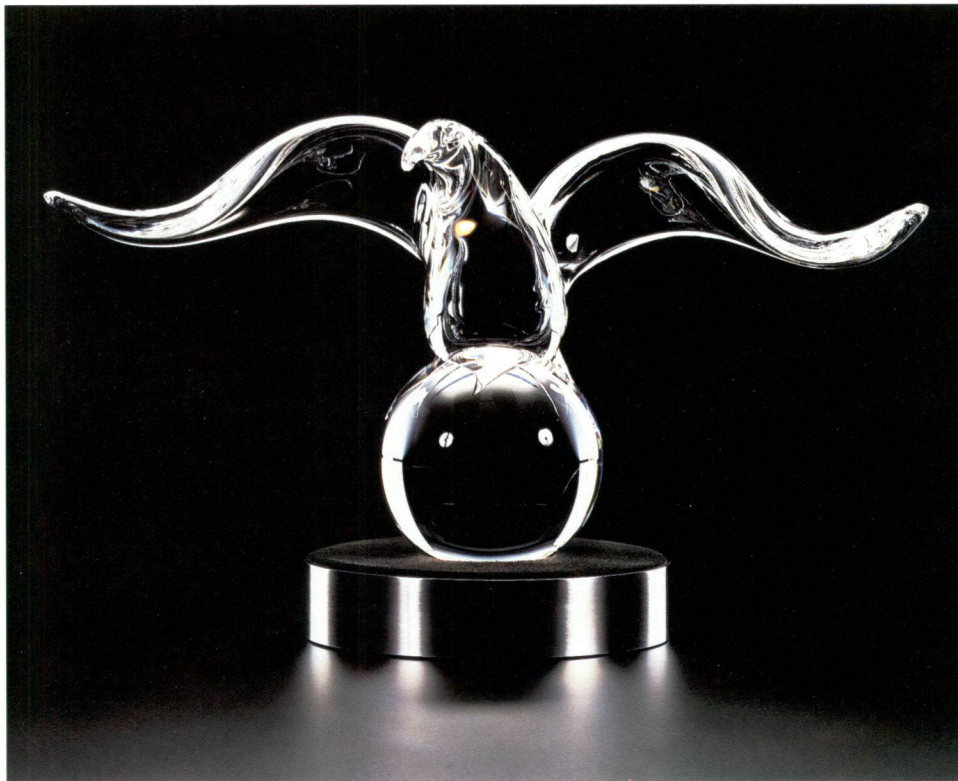
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American Management Systems, Inc.
and the
Graduate School of Industrial Administration,
Carnegie Mellon University

congratulate the winners of the

*Fourth Awards for Achievement
in Managing Information Technology*

Presented May 7, 1991



*The winners of the
Fourth Awards for Achievement in Managing Information Technology were:*

David M. Carlson, K mart Corporation

Richard A. Detweiler, Drew University

John F. Muratore, National Aeronautics and Space Administration (NASA),
Johnson Space Center

John W. Turko, Kennametal Inc.

C. Diana Whitehead, Pacific Bell

CTO

Information
management's
best and
brightest get
their moment in
the spotlight.

THE ENVELOPE PLEASE...

BY JASON S. CASEY

Creating visionary information systems requires CIOs to become extraordinary jugglers who can balance organizational politics with technical know-how. When these systems are implemented

they can bring unexpected benefits to the organization and recognition of the importance of information systems.

Four years ago, American Management Systems, Inc. (AMS) and Carnegie Mellon's Graduate School of Industrial Administration began honoring accomplishments of

information executives by presenting Awards for Achievement in Managing Information Technology. Last month at a gala banquet in New York,

Dr. Rosabeth Moss Kanter

Class of 1960 Professor of Business Administration, Harvard University, and Editor of the HARVARD BUSINESS REVIEW.

Dr. Kanter delivered the keynote address at the awards ceremony.



cations used by Pac Bell's service representatives. Standardization will allow the company to shift its customer inquiry load between business offices, eliminating geographic restrictions. In the future, Gemstar will also enable reps to automatically calculate rates and charges, indicate product and service availability, and sell additional services to customers.

Gemstar proved ground-breaking for Pac Bell in other ways. Whitehead used customer service reps themselves to set the system's requirements, the first time users were so employed at the company. Because of this the new application was quickly developed and won widespread acceptance among service reps.

Said Pac Bell's CIO, Jack Hancock, "Nothing I've seen in my career has had such a positive impact on the organizations I've been associated with."

David M. Carlson

*Senior vice president of corporate information systems K mart Corp.
Troy, Mich.*

Discount retailers have to pinch pennies—lots of them—to survive. K mart Corp. has pinched more than most. According to its chairman, Joseph E. Antonini, K mart has knocked \$200 million off its operating costs each year for the past three years. Antonini gives most of the credit to the retail automation program led by K mart's senior vice president of corporate information systems, David M. Carlson.

Under Carlson, K mart has built a state-of-the-art Unix-based corporate computing platform. K mart now runs one of the world's largest point-of-sale data scanning operations. The scanner data is collected by in-store computers, then transmitted by a VSAT data and video network to a central database.

The savings from online credit authorization alone is expected to pay

The applications running off K mart's IS platform have improved customer service, increased sales and reduced expenses.

for the entire VSAT network in two years. But the applications running off K mart's IS platform have also improved customer service, increased sales and reduced expenses. Scanning and online authorization have reduced customer checkout time by 23 percent. Systems enable K mart pharmacists to fill prescriptions faster and provide customers with their prescription history. A central merchandising system tracks sales, enables K mart's distribution center to replenish popular items in a single day, and helps buyers track sales trends. And the VSAT network broadcasts live video transmissions to the stores, allowing K mart to train sales associates across the country.



Honorable Mentions

John K. Nagata

*Assistant superintendent, information technology
Los Angeles Unified School District
Los Angeles*

The Los Angeles Unified School District (LAUSD) is the second largest school system in the country, spread over 700 square miles, with a \$4 billion budget, 800,000 students and 60,000 employees. Considering the potential here for rampant bu-

reaucracy, the existence of a state-of-the-art network that communicates critical information for the system's day-to-day operations may come as a big surprise.

But John K. Nagata, LAUSD's assistant superintendent of information technology, has forged such a network, and more than 5,000 employees use it successfully. Built around five communications nodes, the LAUSD network connects 800 physical locations. The Payroll-Time Reporting System and the Student Information System keep the network humming: In the future it will support E-mail and office automation applications. LAUSD's personnel have been able to administer the district's policies and procedures much more uniformly now that all such information is online and updated as needed.

James L. Zucco, Jr.

*Senior vice president, systems engineering
MCI Telecommunications Corp.
Arlington, Va.*

MCI recognizes that new customer offerings can have a critical impact on market share in the competitive telecommunications industry. To support its growing roster of products, the company relies on James L. Zucco to develop and implement the necessary technology, hardware and capabilities.

Under Zucco's management, MCI has integrated multiple hardware platforms, enabling it to offer many of the services and features the company relies on to differentiate itself from competitors. Zucco's group has also enabled clients to access billing and service information directly through a terminal in their offices. By modernizing the applications architecture, Zucco reduced the information services time-to-market delays by 75 percent. He also oversaw the creation of intelligent networks that allow MCI's large customers to change the capability of their virtual networks in response to their changing needs. ☐

About the Awards

American Management Systems, Inc. (AMS) and Carnegie Mellon University's Graduate School of Industrial Administration (GSIA) have designed the Awards for Achievement in Managing Information Technology to recognize executives and professionals who have made outstanding contributions to their organizations through the effective use of computer systems and communications technology.

For companies worldwide, the Awards represent an excellent opportunity to acknowledge senior executives' accomplishments and to distinguish their organizations as front-runners in the effective use of information technology.

Please contact Mrs. Jan Dodson, American Management Systems, Inc., 1777 North Kent Street, Arlington, Virginia 22209, (703) 841-5830 to receive more information about the Awards, and a nomination form for the Fifth Awards program.

About the Cosponsors

American Management Systems, Inc.

AMS is one of the nation's leading firms in applying computer technology to the business problems of large organizations. AMS is an authority on the planning, design, implementation, and operation of large-scale systems, and offers a full range of professional services and proprietary applications systems. Founded in 1970, and celebrating its twenty-first consecutive year of growth, AMS is headquartered in metropolitan Washington, D.C., and has offices in 26 cities throughout the United States, the United Kingdom, continental Europe, and Canada.

Graduate School of Industrial Administration Carnegie Mellon University

The Graduate School of Industrial Administration (GSIA) is the business school of Carnegie Mellon University in Pittsburgh, Pennsylvania. GSIA was founded in 1949 by prominent management educators G. Leland Bach, William W. Cooper, Richard M. Cyert, and Herbert A. Simon. The school has pioneered educating future managers in the use of quantitative methods and computer/communications technology. This analytic approach gives GSIA a unique perspective on the direct benefits and effects technology has on large-scale organizations. GSIA offers a Masters of Science in Industrial Administration and a Ph.D. in Industrial Administration and in Economics.

American Management Systems, Inc.
and the
Graduate School of Industrial Administration,
Carnegie Mellon University

congratulate the winners of the

*Third Annual Awards for Achievement
in Managing Information Technology*

Presented November 15, 1989



*The winners of the
Third Annual Awards for Achievement in Managing Information Technology were:*

Jane E. Bailey, Commonwealth of Virginia, Department of Taxation

R.W. (Bill) Eaton, Levi Strauss & Co.

Paul F. Glaser, Citicorp

James C. Grant, The Royal Bank of Canada

G. Nichols (Nick) Simonds, Chrysler Corporation

CTO

They share the ability not only to envision strategic uses of IT, but to garner support and implement winning systems.

Bobby R. Inman

Formerly Chairman and CEO Westmark Systems Inc.; Chairman and CEO MCC; Deputy Director, CIA; Director, National Security Agency.

Admiral Inman delivered the keynote address at the awards ceremony.

THE IT VISIONARIES

BY AMY BERMAR

Each year, a handful of information professionals risk their careers and, often, millions of dollars in corporate assets investing in strategic programs designed to position their companies for the future. Here are five whose gambles have all paid off in a big way.



Jane E. Bailey (the commonwealth of Virginia's Dept. of Taxation), Bill Eaton (Levi Strauss & Co.), Paul F. Glaser (Citi-corp), James C. Grant (The Royal Bank of Canada), and G. Nichols Simonds (Chrysler Corp.) have won this year's Awards for Achievement in Managing Information Technology. The awards are co-sponsored by American Management Systems Inc. and Carnegie Mellon Uni-

versity's Graduate School of Industrial Administration.

As a group, these four men and one woman are being recognized for their leadership, insight and substantial contributions to their employers' financial performance. They represent finance, government

"hybrid" bankers. By encouraging bankers to understand technology—and technologists to understand banking—Grant helped both sides do their jobs better.

"Technology was no longer something you used to streamline your back office," said Grant, who is based in Toronto. In the early 1980s, Grant represented Canada at the International Chamber of Commerce. In that role he observed how European and Asian countries were planning to exploit technology. "It was strategic, and some very smart people were thinking about it."

At the bank, a newly skilled cadre of sales and marketing executives grasped how technology could help them serve clients by combining information from previously separate services. At the same time, programmers created scores of new applications designed to keep the bank in its leading position in the increasingly market-driven arena of retail banking.

"The world is changing," said Grant, 52, referring to the need to meld business insights with programming skills. "Only those who are adaptable will be around."

Internal technology symposiums held by the bank for its executives in 1985 helped convince top management that exploiting computers' capabilities was key. Technical staff

"The world is changing. Only those who are adaptable will be around."

—James C. Grant

got the message in their own seminars. By 1987, the IS department stopped programming routine reports, assigning these applications to end users. In the meantime, some 50 people changed positions, moving from systems to marketing and vice versa.

Customers see the difference in more than 300 distinct products and

services. Branch customers can now apply for loans electronically, and some commercial customers can even issue commercial paper via their PCs.

Today the bank has more than \$110 billion (Canadian) in assets and holds a significant lead over Canada's five other national banks. "We're developing products faster," said Grant, "and we're developing more products."

G. Nichols Simonds

*Executive director of MIS
Chrysler Corp.
Highland Park, Mich.*



With more than a dozen computers installed on the typical new-model car, finding the source of a problem is often the hardest part about fixing it. But Nick Simonds, Chrysler

Corp.'s executive director of MIS, believes that's no excuse for failed attempts. "If we fix it right the first time," he said, "we don't have to pay for the second and third times."

As the chief advocate of a sweeping new computerized diagnostic system, Simonds confronted a similarly complex environment: Chrysler was recovering from near financial disaster, the company's mechanics were wary about too much technological change, and the increasingly competitive market left little leeway for costly new programs.

"Initially, everyone's hard to win over," said Simonds, who joined Chrysler in 1984 after spending nearly two decades in the steel industry. The 50-year-old IS executive and his staff toured the corporation, forging alliances between different departments. The team's proselytizing paid off, and the Service Bay Diagnostic

System is being rolled out this winter after two years of work and \$8 million in development costs.

A simple cable will link PS/2 Model 80 diagnostic workstations and the engine blocks of new cars; the connection allows the workstation to run more than 300 tests. For intermittent

Information acquired through diagnostic testing will eventually be transmitted over the company's satellite network, allowing mechanics at more than 5,000 dealerships nationwide to obtain details about a particular car.

problems that only show up on the road, a hand-held device is attached to the engine to record and store the data as the trouble occurs. The mechanic can then access that information at a later date.

Information acquired through diagnostic testing will eventually be transmitted over the company's private satellite network, allowing mechanics at more than 5,000 dealerships nationwide to obtain details about a particular car. By the early 1990s, engineers will also be able to cull the new database for help in modifying automobile designs.

The system should be fully installed by 1993, when it's expected to save the company some \$10 million yearly in warranty repairs by enabling mechanics to get the repairs right the first time. But that, said Simonds, isn't the most valuable benefit: "If people come back to buy our cars in the future—well, that's the name of the game." ☐

Amy Berman is a business writer based in Boston.

About the Awards

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Please contact Mrs. Jan Dodson, American Management Systems, Inc., 1777 North Kent Street, Arlington, Virginia 22209, (703) 841-5830 to receive more information about the Awards, and a nomination form for the Fourth Annual Awards program.

About the Cosponsors

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American Management Systems, Inc.
and the
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Carnegie Mellon University

congratulate the winners of the

*Second Annual Awards for Achievement
in Managing Information Technology*

Presented November 9, 1988



*The winners of the
Second Annual Awards for Achievement in Managing Information Technology were:*

George A.L. David, Otis Elevator Company
George J. Feeney, The Dun & Bradstreet Corporation
Charles S. Feld, Frito-Lay, Inc.
Phyllis A. Gardner, U.S. Department of Justice
John P. Singleton, Security Pacific Corporation

CIO

With their second annual achievement awards, American Management Systems and Carnegie Mellon University salute a handful of technology innovators.

HIGH FIVE

BY DEBORAH COOPER

The five winners of the second annual Awards for Achievement in Managing Information Technology have more in common than just the Steuben Glass eagles they received at the dinner held in their honor on November 9. Each used information technology as a communications link between disparate populations—attorneys, repair people, bank clerks, delivery drivers and non-computerized businesses. This technology not only enhanced customer service but impressively improved the corporate bottom line.



Dr. Martin S. Feldstein

*Professor of Economics,
Harvard University
President, National Bureau of
Economic Research*

*Dr. Feldstein delivered the
keynote address at the awards
ceremony.*

The awards, co-sponsored by American Management Systems Inc. (AMS) and Carnegie Mellon University's Graduate School of Industrial Administration (GSIA) in Pittsburgh, were established to recognize the information technology achievements of both private- and public-sector executives. AMS, founded in 1970 and located in Arlington, Va., uses information technology and systems engineering to solve management problems for large organizations. AMS's revenues for 1987 were over \$174 million. GSIA is well known for its analytical and quantitative approach to computer and communications technology education.

This year more than 4,000 CEOs and other top executives from all sectors of the economy were sent nomination forms. Twenty-seven finalists were then chosen. A panel of judges from AMS, GSIA and other information-intensive organizations whittled that list down to the five winners. Their selections were based on organizational achievements and individual characteristics such as vision, innovation and leadership. In addition to the five award recipients profiled below, three individuals were also selected for honorable mentions: Randall Fields of Mrs. Fields Cookies; Michael Brown of the city of Hartford, Conn., and Marvin Martin of RJR Nabisco.

pads or secretaries. At the same time, paralegals and other support staff had to learn word-processing skills.

"The beauty of AMICUS," explained Gardner, "is that despite its behind-the-scenes complexity, to the user in front of the computer screen it is very easy." With a few keystrokes, in fact, an attorney or paralegal can access both the Justice Department's own database files and the remote online databases Lexis, Nexis, Westlaw, Juris and ABAnet. "We had no desire to force anyone to become a techie to use AMICUS," she said.

Everyone has a workstation on his or her desk; these range from dumb terminals to personal computers. Whatever their power, however, they can all access every AMICUS function. Uptime averages 98 percent. "Performance has to be near perfect

"The beauty of AMICUS is that despite its behind-the-scenes complexity, to the user in front of the computer screen it is very easy. We had no desire to force anyone to become a techie to use AMICUS."

—Phyllis Gardner

because you can't have any system problems if you're going to court in two minutes," she explained.

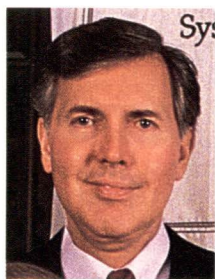
Productivity studies, including time and motion tests, have demonstrated AMICUS's success, said Gardner. Documented increases in productivity are 19 percent for attorneys and 49 percent for clerical staff. Another indicator of the system's success is that inquiries about AMICUS have been coming in from as far away as Finland. "The drums are also beating" closer to home, she said, "because as soon as people see how easy it is, they love it."

Gardner believes winning the Managing Information Technology award will make the private sector more

aware of AMICUS. It is a kind of vindication of her vision. When she first proposed the system in 1982, she was told that technologically it could

John P. Singleton

President
Security Pacific
Automation Co. (SPAC)
Los Angeles



Sy SPAC is the wholly owned information services subsidiary of one of the country's largest bank holding companies, Security Pacific National Bank (SPNB). Its own success story primarily accounts for SPNB's ranking by customers (according to a study conducted by Connecticut-based Greenwich Associates) as the best bank operation in California and one of the top 10 in the United States.

Only six years ago SPNB was ranked 20th out of 20 banks surveyed. The dramatic turnaround results, in large part, from President John Singleton's unique approach toward managing information. He sees his role more as a strategic planner than as an implementer of specific technologies.

"Most companies run their data-processing operations the wrong way," said Singleton. "DP is not about being centralized or decentralized. It's more that all managers have to be business executives first and technologists second."

Singleton believes that risk-taking is essential to successful organizations. His former jobs, as an executive at an aerospace company and chief operating officer at the Federal Reserve, made him understand what risk-taking was all about.

One of the biggest risks Singleton has taken since coming to SPAC was emphasizing professional manage-

ment training for every manager from senior level to first line. "In Japan most line managers are trained for six months. But in the United States most companies don't spend any time," Singleton observed. At SPAC, every manager is provided with a loose-leaf book thick with management tips and strategies.

This management style, in which risk-takers are rewarded with bo-

"DP is not about being centralized or decentralized. It's more that all managers have to be business executives first and technologists second."

—John Singleton

nuses if they succeed but not fired if they fail, leads to a quality of service Singleton believes unparalleled in banking. Also unheard of—in almost any industry—is that for the last five years SPAC's operating budget has decreased. Furthermore, SPAC's costs as a percentage of non-interest expenses have decreased 5 percent during the last three years to 11 percent. The rest of the financial services industry is looking at increases of 3 percent to 18 percent annually.

Unlike other banks, SPAC is also winning software development jobs in direct competition with software and hardware firms and aerospace companies. Singleton again attributes these triumphs to his belief that taking risks and being creative produces entrepreneurial-spirited employees and an exploding bottom line for the parent company, in his case, Security Pacific. ☐

Deborah Cooper is a freelance writer based in Boston.

About the Awards

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American Management Systems, Inc.
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Graduate School of Industrial Administration,
Carnegie Mellon University
congratulate the winners of the
*First Annual Awards for Achievement
in Managing Information Technology*
Presented May 19, 1987



*The winners of the
First Annual Awards for Achievement in Managing Information Technology were:*

Joseph Brophy, The Travelers Corp.

Michael Cruskie, State of New York Division of Criminal Justice Services

Clint Joyce, Albertson's

Ron Ponder, Federal Express

Michael Zucchini, General Re Corp.

Behind the News

PEOPLE

Business Focus Is Key to Success

Understanding the company business is cited by winners of the First Annual Awards for Managing Information Technology.

BY MARY KATHLEEN FLYNN

Ever get the nobody-loves-MIS blues? Take heart. The Graduate School of Industrial Administration (GSIA) of Carnegie-Mellon University and American Management Systems Inc. (AMS) have established an award that casts the spotlight upon MIS managers who have made outstanding contributions to their organizations through the effective use of computer systems and communications technology. It was a little over a year ago that AMS approached the GSIA and proposed an award for excellence in MIS. The software vendor had enjoyed a long recruiting relationship with Carnegie-Mellon, and the university agreed to co-sponsor the award.

The Pittsburgh business school and the Arlington, Va.-based software company held their First Annual Awards for Achievement in Managing Information Technology dinner in New York in May to honor this year's five winners: Joseph Brophy of the Travelers Corp., Hartford, Conn.; Michael Cruskie of the New York State Division of Criminal Justice Services, Albany; Clinton Joyce of Albertson's Inc., Boise, Idaho; Ron Ponder of Federal Express Corp., Memphis; and Michael Zucchini of General Re Corp., Stamford, Conn. Each winner received a Steuben glass eagle and a cash honorarium of \$1,000. Walter Wriston, former chairman and ceo of New York-based Citicorp, delivered an address at the ceremony.

The winners were selected by a panel of six judges—two GSIA professors, two AMS executives, and two independent industry experts. One of the judges, Charles Kriebel, professor of industrial administration at GSIA, considers the award "an excellent idea that was long overdue." The point of the award, Kriebel explains, is "to recognize individuals who use technology to improve upon the overall performance of organizations."

The judges considered 350 individ-

uals who were nominated by their ceos. The panel looked for MIS managers whose use of technology had significant impacts on their own companies and who, in addition, exhibited "general innovation with respect to an application and professional leadership," says Kriebel. He elaborates, "By that I mean, 'Has the individual contributed more, in a general way, to the profession, and not just to the organization?'"

Joseph Brophy, Travelers Corp.

While the award recognizes specific accomplishments within the last two or three years, Brophy's prize was as much inspired by achievements during his 16-year career at Travelers as it was by more recent coups. The judges singled him out for initiating changes that have had a profound effect on Travelers' business success.



Travelers' Joe Brophy was honored for the contributions he's made throughout his 16-year career at the insurance giant.

In addition to this new award, senior vp Brophy previously had been named Man of the Year by the Data Processing Management Association (DPM) for 1986 (see "Color Me Blue," Jan. 1, p. 85).

Brophy's Award for Achievement in Managing Information Technology takes its place on a trophy shelf that is overflowing with accolades he's won while at Travelers.

One of the leading-edge systems that Brophy has launched at Travelers is an office communications network. It merges voice and data over T1 carriers, creating an advanced voice mail and teleconferencing system. This network, through the 17,000 micros Brophy has installed at the \$16 billion insurance giant, gives independent agents on-line access to customer and policy information that is stored in the company's 3,600 databases.

Perched at the top of the list of factors that Brophy believes have contributed to his success are "high-level champions among senior management, people with a vision who want to do things differently—to stretch technology to achieve objectives, not just automate. Most ceos don't get that vision from paper; MIS management has to work hard educating them."

Brophy himself has never lacked the management support that so many MIS execs find elusive. Confident that he's got "top management support for everything we're doing," he insists that Travelers has always been a leading-edge company. "We had the first commercial use of the telephone. We sold Alexander Graham Bell a two-cent travel policy over the phone."

Ron Ponder, Federal Express

Commitment to the customer is one characteristic that made Ron Ponder stand out among the pool of nominees. Ponder, senior vice president of Federal Express Corp., developed and implemented a customer service system called COSMOS, recently upgraded to COSMOS IIB. It allows the courier service to track every package it handles every step of the way.

Each Federal Express courier carries a handheld scanner that contains a keyboard, a read-out display, and 400Kb of memory. The scanner plugs into a microcomputer on board the courier's van, which in turn sends data back to a Digital Equipment Corp. mini at the corporate headquarters in Memphis. COSMOS IIB is the reason that Federal Express can tell you where your package is if you call up to complain that it's late or lost.

Ponder's goal in designing this sys-

Behind the News



Harry Dalton of Federal Express accepted the award on behalf of Ron Ponder, who helped the company set the standard for delivering packages overnight and on time.

tem was "to make it as easy as possible to do business with us." A firm believer in "knowing as much about the business as you do about technology," he sees the role of dp at Federal Express as "adding value to our product to differentiate it from the others."

Michael Zucchini, General Re Corp.

Michael Zucchini believes in thinking "beyond the traditional role of data processing." Technology, he states, can be "the driving force of product differentiation." As president of General Re Services Corp., a leading reinsurance holding company, Zucchini landed his eagle for developing a system called CONFER (Communications Network for Electronic Reinsurance).

With CONFER, General Re's 300 underwriters produce all reinsurance quotations and coverage documents, such as binders and certificates. The underwriters "talk to clients on the phone while performing services on-line," explains Zucchini. "This means faster service, better quality documents, and better accuracy. We're able to do things in minutes that used to take days."

CONFER automatically generates premium and accounting entries and handles all routine correspondence. Specialized hardware and software installed at some clients' offices provides additional customer services, such as electronic delivery of all documents.

Ronald Ferguson, General Re's president, claims that CONFER is "as sig-

nificant to us as an on-line, real-time reservation system is to an airline."

Zucchini, like Ponder of Federal Express, believes that keeping the customers in mind is a major factor in one's success. "You need to listen to your customers," he proclaims. "Most companies don't ask the customer, 'How would you like to see the bills?' Instead, they ask the accounting department. When the system's being built, there should be two orientations—to look at the internal and external benefits."



General Re Corp.'s Michael Zucchini thinks "beyond the traditional role."

Clinton Joyce, Albertson's Inc.

Clinton Joyce, senior vice president of MIS for Albertson's Inc., has concentrated primarily on internal benefits. He won the achievement award for developing and implementing several systems that allow the eighth largest supermarket chain in the U.S. to maximize profit margins. Albertson's has been maximizing for quite some time: Joyce points out that the grocery conglomerate has enjoyed "17 years of increased sales and profits."

Joyce masterminded a sales information system that closely monitors the performance of each retail department, store, district, division, and market throughout Albertson's 17-state chain. He also introduced an integrated accounting and reporting system that enables management to control expenses and track individual store performance and profitability. The most recent additions to Albertson's information systems are electronic handheld ordering devices.



Clinton Joyce of Albertson's Inc. has always believed in "staying tuned to retail."

Joyce, an Albertson's veteran of 19 years, believes that information systems have contributed significantly to the chain's success. They're "at the heart of merchandising for the whole company," he states. His boss, ceo Warren McCain, says Albertson's has "the most effective information system in the retail food industry."

Joyce attributes much of his success to "staying tuned in to retail. It's just like being in the military, where your military duty comes before your specialty. Corporate responsibility has to come first." The systems he's designed are critical to Albertson's profitability. He claims they've allowed the company to develop the "right mix of products to get a higher profit margin."

Michael Cruskie, New York State

The public service winner of the achievement award was Michael Cruskie, executive deputy commissioner of the New York State Division of Criminal Justice Services. Cruskie won the award for his role in coordinating two statewide criminal justice computer systems.

The New York State Division of Criminal Justice Services was created in the early 1970s to improve administration of the state's criminal justice system, particularly by fostering the exchange of information among more than 2,000 local and state agencies, courts, and corrections departments. Gov. Mario Cuomo appointed Lawrence T. Kurlander as the division's commissioner in 1983. At the top of Cuomo's agenda for the division was the upgrading of its

Behind the News



Michael Cruskie has been executive deputy commissioner of the New York State Division of Criminal Justice Services since 1983.

computer systems, and Kurlander's first step was to hire Cruskie.

Cruskie put together a task force to study different functional areas, such as prosecution, courts, and public defense. The task force made recommendations for changes to the systems already in place. The governor and legislature approved both the structure and funding for the project.

Aided by outside experts and an in-house staff of six, Cruskie coordinated a micro-based jail management system, which now enjoys 100% voluntary participation, and implemented the first phase of a statewide criminal justice data communications network.

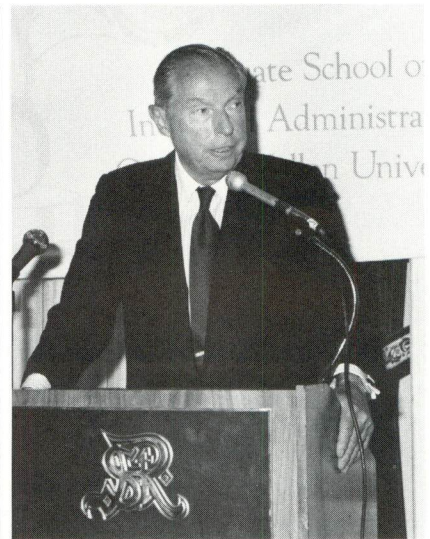
The Systems Improvement for Enhanced Community Safety Program is a micro-based system Cruskie introduced for warrant management and tracking. The soft-spoken civil servant says most local police departments using it have "doubled their warrant execution."

Another system Cruskie has begun to implement is the Statewide Automated Fingerprint Identification System (SAFIS). "In the past two years," Cruskie explains, "significant developments have occurred in the imaging technology for matching fingerprints. In the 'Night Stalker' case, San Francisco police were able to solve a 23-year-old serial murder" with the aid of this improved technology (see "Cpu Nabs Suspect," Nov. 1, 1985, p. 67). Cruskie expects the full implementation of SAFIS to help solve thousands of crimes a year in New York state.

What impressed the judges most about Cruskie is his ability to get so many diverse organizations to work together. The executive deputy commissioner must contend with 1,000 locations and 1,300 agencies. He describes his modus operandi for this challenge as "not dictating solutions. It was the nature of the beast," he continues, "that I couldn't say, 'This is the way it's going to be done.' Instead, we had to create an environment in which we all worked together for solutions. We needed a buy-in on everybody's part."

Without Kurlander's support, as well as a "management commitment from the Governor's office," Cruskie believes he couldn't have launched these systems or won the achievement award.

In addition to the five winners, AMS and Carnegie-Mellon's GSIA awarded five honorable mentions. They went to Anthony Ciriano, vice president in the Trading and Treasury Services Group of Chase Manhattan Bank, N.A., New York; Anthony Herriott, senior vice president of Chemical Bank, New York; John Kerin, senior vice president of the Operations Division of McGraw-Hill Inc., New York; Col. F. Lee Maybaum, USAF (Retired) of the Defense Communications Agency, Department of Defense in Washington, D.C.; and Adel A. Zakaria, director of engineering of the Engine Group of Deere & Co., Moline, Ill. ■



Walter B. Wriston, former Chairman and CEO of Citicorp, delivered the keynote address at the award ceremony.

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was included in



An Excerpt from
The Service Edge: 101 Companies That Profit From Customer Care
Published in September 1990

How the Service 101 Were Chosen

NAMING THE BEST OF ANYTHING—be it ice cream, hotels, doctors, or pizzas—is asking for trouble. The U.S. economy is alive, diverse, and wondrously varied. Our chosen organizations are not 100-percent perfect each and every time they come out of the blocks. We found none of those. The members of the Service 101 attracted us because of their belief that they can *approach* perfection if they just keep at it, and impressed us with their audacity in trying, and succeeding, so often. It is their focus on, dedication to, and sometimes obsession with the effort that makes them worth learning from. These are not the *only* 101 organizations in America that provide noteworthy service. These are the 101 that impressed us as having the most to offer as good examples.

We made three basic assumptions in our research. First, against a backdrop of mediocre, lackluster, or downright unsatisfactory treatment, we expected providers of good service to be plainly visible. Such proved to be the case.

Second, we expected that customers in the many and various subsectors of the economy would already have “discovered” our service leaders, even if the public at large had not. Customers vote with their feet. They go where they find the kind of service they want. Research shows that companies that hit on winning service formulas are profitable, grow in market share, and inspire a lot of highly positive word-of-mouth commentary among the people they satisfy. We looked for evidence of that, and it was there in abundance.

Finally, we assumed that exemplary service providers would not only be known as such to their customers, but also to their own employees. Good performance in the service marketplace is no more an accident than is any other kind of business success. As in any other kind of endeavor, the activities of an outstanding service organization have to be planned, managed, measured, and modified to keep them on target. That means the employees have to be in on the secret—they have to be selected, trained, empowered, and rewarded appropriately. We expected to find plenty of evidence of that among the Service 101, and we weren't disappointed there, either.

Technology (Continued)

Support

American Management Systems

Businessland
Dataserv

Communications

Southern Bell
Southern New England Telephone
CompuServe

Manufacturing

Deluxe Corporation
Caterpillar
General Electric
H. B. Fuller
Pioneer Hi-Bred International
Armstrong World Industries

Business-to-Business

Delivery

Federal Express Corporation
United Parcel Service
Sun Distributors

Expertise

Dun & Bradstreet Corporation
Battelle Memorial Institute
Shop'n Chek

Duplicating

Quad/Graphics
Xerox
Kinko's

Support

Safety-Kleen Corporation
Miller Business Systems
ServiceMaster

Pacesetters

Entertainment

Walt Disney World/Disneyland
Cineplex Odeon Corporation

Information

The Wall Street Journal
USA Today

Public

Montgomery County, Ohio
Arizona Public Service Company
Emerald People's Utility District

Care

Kinder-Care Learning Centers
Chicken Soup
Mini Maid Services Company

Five Operating Principles

Wheels

Automotive

Acura Automobile Division
Don Beyer Volvo
Longo Toyota
Jiffy Lube International

Trucking

Ryder System
Wheaton Van Lines
United Van Lines
NW Transport Service

Food Service

Restaurants

Shoney's Restaurants
Pizza Hut
Bob Evans Farms

Fast Food

McDonald's
Domino's Pizza
Wendy's

Food Sales

Retail

Stew Leonard's Dairy
Vons Grocery Company
Ukrop's Super Markets
SuperAmerica

Wholesale

Procter & Gamble Company
Super Valu
Frito-Lay

Retailing

General

Nordstrom
Parisian
Wal-Mart

Specialty

Liz Claiborne
Avon Products
Home Depot
Florsheim Shoe Company

Catalog

L. L. Bean
Lands' End
Williams-Sonoma

Technology

Electronics

Amdahl
Digital Equipment Corporation
3M
AMP

BEYOND THESE GENERAL IMPRESSIONS AND OBSERVATIONS, we have identified five specific operating principles that are common, in varying degrees, to the Service 101. These five factors are fundamental tactics used to build and manage extraordinary levels of customer satisfaction and loyalty. In brief:

- The Service 101 listen to, understand, and respond—often in unique and creative ways—to the evolving needs and constantly shifting expectations of their customers.
- They establish a clear vision of what superior service is, communicate that vision to employees at every level, and ensure that service quality is personally and positively important to everyone in the organization.
- They establish concrete standards of service quality and regularly measure themselves against those standards, not uncommonly guarding against the “acceptable error” mindset by establishing as their goal 100-percent performance.
- They hire good people, train them carefully and extensively so they have the knowledge and skills to achieve the service standards, then empower them to work on behalf of customers, whether inside or outside the organization.
- They recognize and reward service accomplishments, sometimes individually, sometimes as a group effort, in particular celebrating the successes of employees who go “one step beyond” for their customers.

American Management Systems



THE CHIEF CAUSE OF PROBLEMS, ACCORDING to the tongue-in-cheek "law" coined by former newsman Eric Severied, is solutions. In a service economy, that dynamic can create profitable business opportunities for entrepreneurs adept at spotting the need and serving those who display it. American Management Systems (AMS) is a good example.

The company was founded in 1970 by five civilians who had up to that point been working in the office of the Secretary of Defense, where they had been doing studies and analyses of defense programs. Their expertise lay in solving complex management problems in large organizations, generally by applying computer and systems engineering technology. The computer, they had noticed, was both a part of the problem and a part of the solution. Accordingly, through the 1970s they evolved from a strictly consulting-oriented firm into a service-oriented provider of custom software systems and the expert integration of those systems into an organization's day-to-day business. Whether it involves reducing a bank's credit card losses or cutting the amount of time Navy ships spend in overhaul, AMS's basic service is enhancing the productivity of the client's technology.

Its timing has been pretty good. Over the past two decades, computers have multiplied in number and divided in size and compatibility, creating an electronic Tower of Babel. Anybody can buy a computer. Not just anybody can get it to do everything it is supposed to do, let alone do those things in ways people can control and understand. AMS is one of the businesses those businesses turn to when they want to get the megabytes and the microchips working productively.

The focus is still on large organizations, most of them in five carefully targeted areas: financial services; federal agencies; state and local govern-

Directory of the Service 101

Travel

Airlines

Delta Air Lines
American Airlines
Piedmont Airlines (USAir)

Services

American Automobile Association
Club Med
SuperShuttle

Hotels

Marriott Hotels and Resorts
Embassy Suites
Four Seasons Hotels
Hyatt Hotels & Resorts
Mississippi Management

Health Care

Hospitals

Riverside Methodist Hospital
Beth Israel Hospital
Mayo Clinic and Hospitals

Support

Merck & Company
LensCrafters
Bergen Brunswig Drug Company
Shared Medical Systems Corporation

Financial

Personal

American Express
H&R Block

Banking

Citicorp
First Union Corporation
First Wachovia Corporation
First Federal/Osceola
Amalgamated Bank of New York

Brokerage

Goldman Sachs & Company
Fidelity Investments
A. G. Edwards & Sons

Insurance

Northwestern Mutual Life Insurance Company
Chubb Group of Insurance Companies
Amica Mutual Insurance Company
USAA

key to its future. Significantly, AMS rewards technical talent on a par with management and sales, and the compensation of its senior people is tied to multiyear goals to make sure no one gets too preoccupied with short-term results.

Does it work? Consider that in a firm that was founded just twenty years ago, the average AMS vice president has been on board for twelve years. It goes without saying that they worked their way up to those positions. What's more, in keeping with the company's priority on specialized industry subject-matter expertise, more than half of the company's mid-level "principals" are in technical, not management, career paths.

It has been said before in a multitude of ways, but the hardware isn't the hard part of the computer. To make it do smart things takes smart input and management by the machine's human masters. AMS provides the kind of critical business-to-business intelligence that often goes unremarked for the exceptional service it really is.

To learn more about how you can apply information technology and systems engineering services to solve complex management problems, call or write:

CORPORATE HEADQUARTERS

American Management Systems, Inc.

1777 North Kent Street

Arlington, Virginia 22209

(703) 841-6000

(703) 841-5584 FAX

*(Other North American offices in 24 cities
throughout the United States and Canada)*

EUROPEAN HEADQUARTERS

AMS Management Systems Deutschland GmbH

Querstrasse 8-16

6000 Frankfurt 1

GERMANY

49-69-24 55 11 0

49-69-24 55 11 99 FAX

(Other European offices in London and Brussels)

ments and universities; energy; and telecommunications. Rather than try to be all things to all people, AMS has deliberately worked to focus its services. In 1982, only about 70 percent of its business came from its target markets; more than 85 percent of 1989 revenue came from those five sectors.

To organizations in these markets, AMS offers a turnkey software and service package. Typically, it will license its core applications software to a client, in the process customizing it to the special conditions and needs of the client's business. For large organizations, this turns out to be not only a lot less expensive than developing and painstakingly debugging their own software from scratch, but also preferable to buying a "one size fits all" standardized program. An added advantage of AMS's selective focus is the industry-specific expertise it has developed over the years.

At AMS today, three of the five founders—Patrick Gross, Frank Nicolai, and Charles Rossotti—are still actively involved. They have been joined by some twenty-seven hundred employees in the U.S., Europe, and Canada. The client list reads like an index to *The Wall Street Journal*. Forty of the 50 largest banks in the United States; 5 of the top 7 in Canada. More than 300 financial services firms and credit-granting organizations. Major corporations and universities.

City governments in America's three largest cities—New York, Chicago, and Los Angeles—use AMS-designed systems to manage billions of dollars in annual expenditures for goods and services. The Big Apple also has implemented an AMS-designed system to more effectively process the twelve million parking tickets it hands out each year. Over one hundred civilian and defense agencies of the federal government contract for software and services, among them the State Department, the Social Security Administration, the General Accounting Office, the Environmental Protection Agency, all four branches of the military, and the founders' former employer, the Secretary of Defense.

Significantly, AMS earns more than 80 percent of its revenues (which totaled \$225 million in

1989) from services. The balance comes from software licensing fees and maintenance of its software programs. The best evidence of how well AMS serves its technology-dependent customers is the way the organizations that do business with it tend to stick around: Each year, 80 to 85 percent of total revenue comes from companies that were AMS clients the year before; more than 50 percent comes from clients who have been working with AMS three years before.

According to cofounder Charles O. Rossotti, now chairman, a large part of the growth of the company can be attributed to the way it has been able to build and maintain continuing customer loyalty. "Such long-term relationships are not just a major factor in [our] success," he told shareholders in 1989, "they are also, in this business, an ongoing measure of our effectiveness."

How "effective" is effective? The former governor of New Hampshire and current White House Chief of Staff, John Sununu, is convinced the customized financial system package AMS installed on the state's IBM hardware in 1985 has recaptured between 1 and 2 percent of the state's \$1.5 billion annual budget. The system, which has created an integrated data base for all of New Hampshire's financial information, handles more than 20,000 transactions and inquiries a day for 62 state agencies via a network of more than 300 terminals.

It has improved budget analysis and cash management. It helps track personnel trends. It identifies funds that perhaps could be transferred from an underused account to a needy one. It also pinpoints spendthrift state agencies with a habit of dispensing most of their funds in the fourth quarter, an indication of money being wasted by use-it-or-lose-it bureaucrats fearful of facing budget cutbacks if they don't manage to spend every allocated nickel.

Sununu is the kind of demanding client AMS thrives on—an engineering Ph.D. from MIT who used to write technical software for clients of his own consulting firm before turning to politics. And the feeling of admiration and satisfaction appar-

ently is mutual. In 1987, New Hampshire and AMS signed a "strategic partnership" agreement under which the state served as a beta test site for AMS systems and share the results of its testing with other states.

Another believer is the American Association of Retired Persons (AARP), the largest organization of senior citizens in the world. With twenty-nine million members, AARP's record-keeping and membership-service tasks are immense. As the organization grew over the years, data processing jobs traditionally were farmed out to service bureaus that charged fees based on the number of transactions involved.

Continuing growth, however, made those fees increasingly painful to bear, so in 1985 AARP hired AMS under a three-year contract to build and initially manage a centralized data center. The new system is designed to handle current and future membership files faster and more efficiently, perform additional operations as growth continues and new programs are added, and save the organization money that would previously have been paid to outside vendors. Between operating efficiencies and economies of scale, the AMS center that went on-line in 1987 realized a return on AARP's investment within three years.

AMS got the job after a lengthy screening process that considered nearly thirty possible vendors. One reason: AMS's commitment to a "life cycle" concept of service. The company's involvement doesn't end at the point of a sale. In many respects, that's just the beginning. From planning and design through implementation and operations management, AMS stays involved.

But that doesn't mean there's no end in sight. AMS is perfectly willing to work itself out of a job, and AARP is a good illustration: As the three-year management contract ended in 1988, AARP took over full ownership and management of the data center AMS built for it—with AMS on hand to assist in making the transition orderly.

If retention of clients is basic to the success of AMS's services, retention of its own people is the

An aerial photograph of the Carnegie Mellon University campus in Pittsburgh, Pennsylvania. The image shows various university buildings, green spaces, and a large athletic field with a running track. In the background, the Pittsburgh skyline is visible, including the PPG Place and the Arlene Schnitzer Pavilion. The image is framed by a yellow border and set against a red background.

Carnegie Mellon

.....
1991 - 92 FACTS

Produced 9/91 by the Division of University Relations,
Carnegie Mellon University.

Administration

Dr. Robert Mehrabian has been president of Carnegie Mellon since July 1990. Robert A. Charpie, chairman of Ampersand Ventures in Boston, is chairman of Carnegie Mellon's Board of Trustees.

In preliminary figures for fiscal 1990-91, the university had total operating expenditures of \$291,280,000 and endowments (market value) of 313,581,794.



Students find quiet corners on campus for the contemplation essential to education.

Campus Resources

Located between a quiet, residential neighborhood and Pittsburgh's Schenley Park, the Carnegie Mellon campus spans approximately 100 acres and contains 54 buildings. A recently completed, multi-million-dollar construction project gives the campus a new dormitory/dining hall, parking building and stadium.

The university's three libraries – the Engineering and Science Library, Hunt Library and the Mellon Institute Library – hold more than 767,000 volumes and 4,276 periodical subscriptions. Carnegie Mellon students also use the nearby Carnegie Library and the libraries of the University of Pittsburgh, as well as those of other local colleges and universities.

Student activities on campus vary from special interest clubs, organized sports, a newspaper and a radio station to fraternity and sorority events and varsity competition in 17 sports. Fitness and recreation facilities include athletic fields, tennis courts, gymnasiums, racquetball courts, a swimming pool and a weight room.

Phone Numbers

Area code is 412; exchange is 268

Activities Information	268-2107
Admissions	2082
Alumni Relations	2060
Annual Fund	2022
Athletics	2211
Bookstore	2966
Campus Police	2323
Carnegie Shoppe	3465
Child Care Center	2149
Development	2135
Financial Aid	2068
Housing	2139
Parking	2052
Public Relations	2900
Registrar	2004
Student Affairs	2076
Vice President for Enrollment	2056
For other offices	2000



Study break! Students at Carnegie Mellon participate in time-honored activities such as buggy races (shown) and a spring carnival.

Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA 15213-3890

Carnegie Mellon University does not discriminate and Carnegie Mellon University is required not to discriminate in admission, employment or administration of its programs on the basis of race, color, national origin, sex or handicap in violation of Title VI of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973 or other federal, state or local laws, or executive orders.

In addition, Carnegie Mellon University does not discriminate in admission, employment or administration of its programs on the basis of religion, creed, ancestry, belief, age, veteran status, sexual orientation or in violation of federal, state or local laws, or executive orders.

Inquiries concerning application of these statements should be directed to the Provost, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone (412) 268-6684 or the Vice President for Enrollment, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone (412) 268-2056.



Carnegie Mellon's Teaching Center leads the university's efforts to achieve excellence in classroom instruction.

Degrees Granted (1990-91)

Bachelor's degrees	874
Master's degrees	707
Doctor's degrees	175
Total	1,756



Carnegie Mellon counts more than 3,326 top corporate executives, approximately 1,400 university professors and about 36 deans at colleges and universities among its 46,000 alumni.

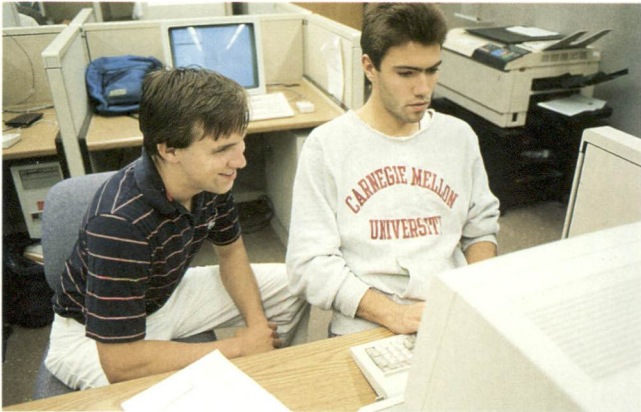


Research at Carnegie Mellon provides learning opportunities for faculty, staff and students while expanding society's body of knowledge.

Faculty and Staff

	<i>Full-time</i>	<i>Part-time</i>	<i>Total</i>
Faculty	563	—	563
*Special Faculty	85	165	250
Staff	2,304	808	3,112
Total	2,952	973	3,925

*Includes visiting faculty; excludes special research faculty.



About 85 percent of Carnegie Mellon students regularly use computing in their educational activities. All students have access to personal computing workstations through an innovative, campus-wide network called Andrew.

Carnegie Mellon University

Carnegie Mellon has emerged as one of the nation's top private research universities. The university's interdisciplinary approach provides graduates with professional and technical skills and a strong science and liberal arts background. According to Edward B. Fiske, education columnist for *The New York Times*, Carnegie Mellon's "faculty and administration have done the most original thinking of any American university in pursuing the twin goals of liberal-professional education."

Carnegie Mellon began in 1900 when industrialist Andrew Carnegie founded Carnegie Technical Schools in Pittsburgh's Oakland section. Twelve years later these schools became a degree-granting college — the Carnegie Institute of Technology. In 1967, Carnegie Tech merged with the Mellon Institute of Research to form Carnegie Mellon University.

Carnegie Mellon's internationally recognized programs encompass the areas of engineering, technology, science, liberal arts, fine arts, and public and private management. The university includes four undergraduate colleges and three graduate schools:

The Carnegie Institute of Technology (CIT) includes six departments: Chemical Engineering, Civil Engineering, Electrical and Computer Engineering, Engineering and Public Policy, Mechanical Engineering, and Metallurgical Engineering and Materials Science, plus a Biomedical Engineering option.

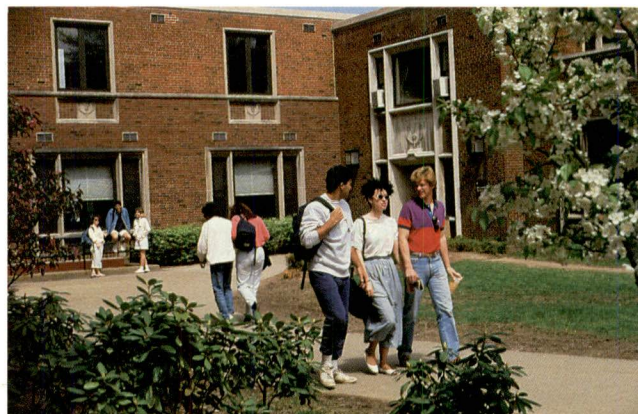
The College of Fine Arts (CFA), the first school in the nation to award a degree in drama, includes the departments of Architecture, Art, Design, Drama and Music.

The College of Humanities and Social Sciences (H&SS) is recognized for its broad view of the liberal-professional arts and its commitment to excellence in teaching. Its departments include Economics, English, History, Modern Languages, Philosophy, Psychology, Social and Decision Sciences, and Statistics.

The Mellon College of Science (MCS) is composed of the departments of Biological Sciences, Chemistry, Mathematics and Physics, and offers an undergraduate degree in computer science with the School of Computer Science.

The Graduate School of Industrial Administration (GSIA) offers a Master of Science in Industrial Administration, a degree roughly equivalent to an M.B.A. with a firmer scientific component based on the use of quantitative methods as management tools. GSIA also offers doctoral and executive education programs, and supports undergraduate programs in economics and industrial management.

The School of Computer Science operates at the forefront of research in computing, artificial intelligence and robotics. The school grants undergraduate and graduate degrees, and participates in special undergraduate programs in mathematics, biological sciences, physics and chemistry.



Students come to Carnegie Mellon from every state and more than 40 foreign countries.

The School of Urban and Public Affairs offers graduate programs to educate managers and analysts for government and non-profit organizations; it awards master's degrees in Public Management and Policy, Arts Management, Urban Development and Management, and a doctor's degree in Public Policy Analysis.

Carnegie Mellon's many research centers, exploring fields such as robotics, software engineering, biology, computer science, magnetics technology, computer-aided design, economic development, international management, computer-aided manufacturing and document design, receive funding from government and corporate sponsors.

Enrollment

	<i>Women</i>	<i>Men</i>	<i>Total</i>
Undergraduate	1,366	3,178	4,544
Graduate	873	2,151	3,024
Special	68	69	137
Total	2,307	5,398	7,705

All figures in this brochure, unless otherwise noted, refer to the 1991-92 academic year.

Tuition for 1991-92 totals \$15,250; a standard double room and full dining plan costs \$5,136.

ams

TURNING INFORMATION TECHNOLOGY'S PROMISE INTO EFFECTIVE SOLUTIONS



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Company Overview

Supporting Clients Worldwide

Our clients around the globe strive to maximize the value of technology in pursuit of their business objectives, whether they seek to offer new products and services, expand markets, increase productivity, or otherwise improve bottom-line performance. Their quest to excel in the face of accelerating technological change, increasingly sophisticated competition, and ever more demanding clientele means challenge—and opportunity—at every turn.

For 22 years, American Management Systems (AMS) has been helping clients discover new ways to creatively apply information technology to strengthen performance and quality service levels through a powerful combination of industry-specific expertise, proven methods and tools, and an extraordinary depth of technological competence. In 1991, we performed engagements for clients on six continents to help them meet the challenges of global competition.

Profile

Business Strategy

AMS combines industry-specific expertise, technical insights, and proven methods and tools to help our clients achieve the highest levels of productivity, quality, and service from their information technology investments.

Industry Expertise

AMS employs professionals with experience in our clients' industries, including finance, insurance, the Federal government, state and local governments, education, telecommunications, and energy.

Global Commitment

AMS works with clients in industries such as finance and telecommunications who face an increasingly global and complex set of business issues. AMS responds to those clients—whether they are U.S. multinationals or international firms—by forming project teams around the world.

Long-term Client Relationships

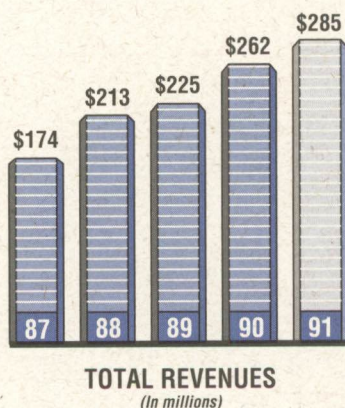
AMS derives approximately 85% of its business each year from clients whom we worked with in the previous year.

Sustained Growth

AMS has sustained an annual growth rate of approximately 20 percent for the past decade with 1991 revenues of \$285 million.

Financial Highlights

(In thousands except per share data)	1990	1991
For the Year		
Services and Products Revenues	\$226,480	\$247,128
Total Revenues	261,929	285,167
Client Project Expenses	141,065	153,230
Other Operating Expenses	83,335	94,555
Corporate Expenses	18,302	16,487
Total Operating Expenses	242,702	264,272
Income from Operations	19,227	20,895
Other (Income) Expenses	29	(112)
Income Before Income Taxes	19,198	21,007
Income Taxes	7,218	7,912
Net Income	11,980	13,095
Dividends and Accretion on Series B Preferred Stock	1,532	1,523
Net Income to Common Shareholders	10,448	11,572
Net Income per Common Share	\$ 1.04	\$ 1.12
Weighted Average Shares and Equivalents	10,076	10,359
At Year End		
Total Assets	\$133,558	\$146,463
Working Capital	47,443	55,703
Other Stockholders' Equity	54,045	69,411

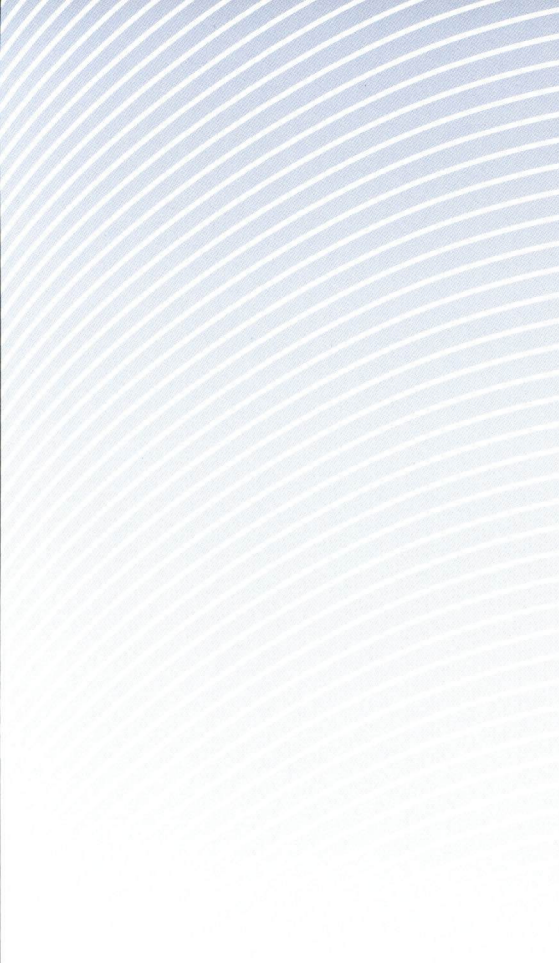




Worldwide Firm

AMS's 3,200 employees serve clients from headquarters in Arlington, Virginia and from offices in 28 cities throughout North America and Europe. AMS has performed projects for clients on six continents.





To Our Stockholders

This year marks the twenty-second consecutive year of growth for AMS. Revenues increased 9% to \$285 million, and net income to common shareholders increased 11% to \$11.6 million. Although 1991 growth was below our historical trend, it came at a time when many of our clients reduced or deferred investments in information technology due to the financial pressures of a declining economy.

While these deferred investments by our clients adversely affected our revenues in 1991, we believe that business and technological changes will create major opportunities for AMS and our clients in the future. Client needs not met in 1991 still exist, and we are well-positioned to help our clients

meet their information technology needs as the economy moves toward recovery.

In response to the near-term challenges, we shifted resources to areas of higher demand. This decision enabled us to increase our business faster than expected with Federal civilian agencies and energy firms, while our business in two traditional growth markets—U.S. financial institutions and telecommunications—was essentially flat. We reduced corporate expenses, both in absolute dollars and as a percentage of revenues.

Simultaneously, we continued to invest in areas that are essential for seizing future opportunities. We increased spending by 37% on activities dedicated to

developing expertise in promising new technologies. In addition, we invested several million dollars in two new opportunities: a joint effort with IBM to develop client/server imaging technology, and a joint effort with NYNEX Mobile Communications Company to develop a customer management and billing system for the cellular telephone industry. AMS acquired the rights to market this comprehensive system. These initiatives will play a significant role in AMS's growth throughout the decade.

We increased spending on training and staff development by 30% and recruited 260 undergraduate and graduate students after a highly competitive process

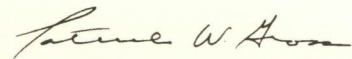
involving some 2,000 interviews.

Our global expansion program continued in 1991 with international business increasing by 43%. Overall, international business now accounts for 10% of AMS's total services and products revenues.

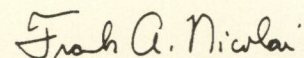
AMS faced an exceptionally challenging year, but the results show the resiliency of our business as well as our commitment to be a long-term, profitable leader with sustained growth.



Charles O. Rossotti
Chairman



Patrick W. Gross
Vice Chairman



Frank A. Nicolai
Executive Vice President
Treasurer and Secretary

The Business of AMS

AMS Partnerships

Because the best solutions often result from collaboration, AMS joins forces with our clients and other leading firms to address problems common to the industries we serve. In each case, AMS and its partner have the opportunity to combine expertise and resources to devise solutions more efficiently and comprehensively than either partner could have achieved alone. Over the years, AMS has worked with strategic and management consulting firms, systems developers and integrators, and computer manufacturers, among others.

IBM holds a ten percent equity interest in AMS. IBM and AMS have entered into a multi-year agreement under which AMS performs development projects for IBM. We are working with IBM on joint projects with individual clients and with IBM industry groups to develop applications for selected markets. In addition, we are working on systems to provide IBM executives with the management information necessary for their market-driven strategy.

We joined forces with Bell Atlantic to form Bell Atlantic Systems Integration Corporation (BASIC). BASIC provides clients with the technologies to access, combine, exchange, and use information from disparate computers and networks. Our expertise in delivering effective solutions through information technology complements Bell Atlantic's strong worldwide telecommunications skills.

AMS has joint marketing partnerships with a number of companies, most targeted to specific industries, application areas, and clients. These relationships allow each partner to provide their clients with complete solutions that combine the best both firms have to offer.

Twenty-two Years of Helping Clients Solve Business Problems

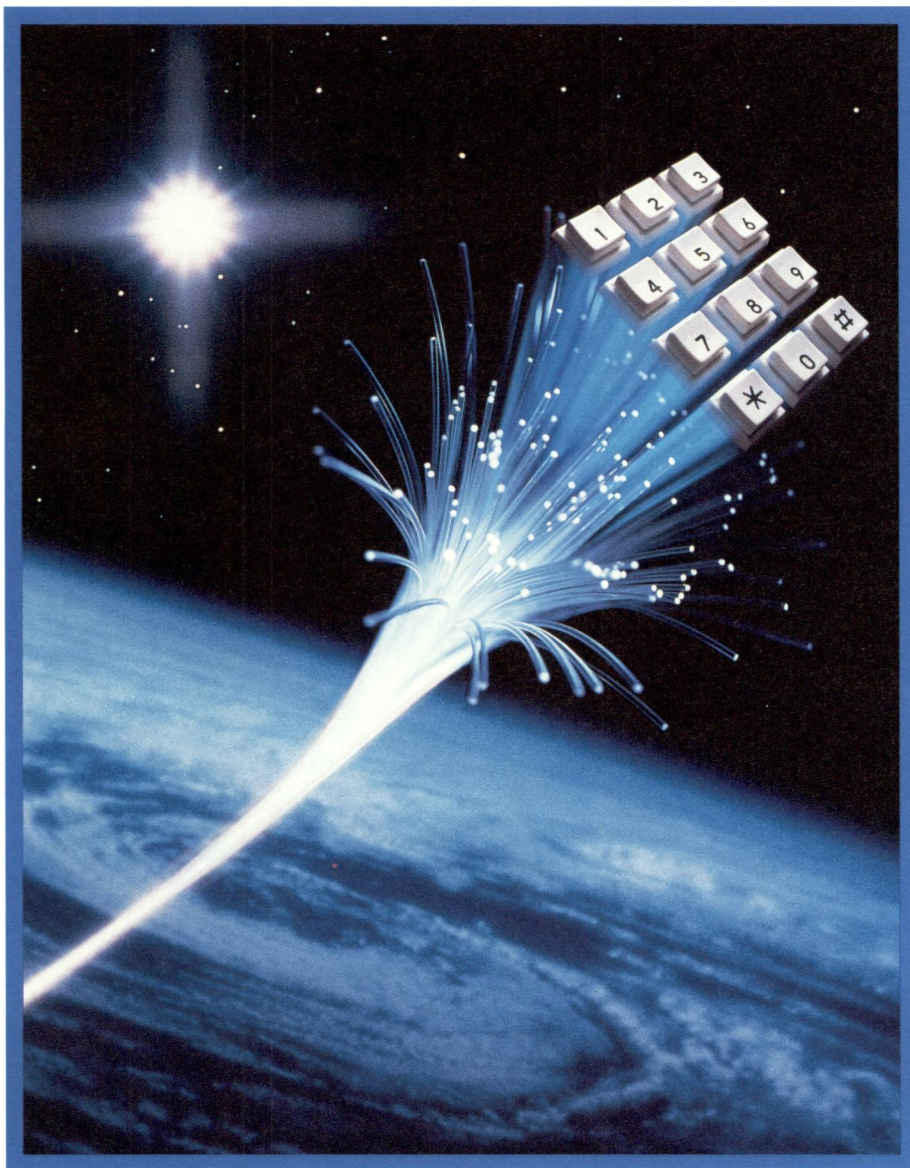
Since 1970, AMS has been working with clients to achieve the highest possible business value from their information technology investments. We accomplish this by first gaining a thorough understanding of our clients' business objectives and then helping them identify alternatives and develop and implement solutions that measurably contribute to their success.

We offer our clients a full range of information technology services from strategic systems planning and business system concept development to large-scale custom systems design, development, implementation, and training. Our project management experience and

tools enable us to support our clients through all phases of the system life-cycle. We often use leading edge technologies to help clients capitalize on the opportunities from the creative application of information technology.

Long-term Client Relationships, Solid Solutions

Our clients tend to be large organizations with substantial information management investments. They look to us for the extra value our skills and expertise contribute in structuring and completing key projects. The results are long-term client relationships that endure changes in the marketplace, in management, in regulations, and in technology.



Bell Atlantic International

To help companies better compete in a rapidly changing telecommunications industry, AMS teamed with Bell Atlantic International, Inc. (BAII) to market TieLine, an AMS-developed customer contact and billing system. TieLine is designed to automate many business critical functions and manage all aspects of customer account information via an integrated data base which helps clients reduce costs and enhance operating efficiencies.

The BAII and AMS marketing venture merges AMS's technological and industry expertise with Bell Atlantic's knowledge of the international telecommunications business. Already, TieLine is widely accepted in the U.S. marketplace, and now the two companies can deliver the same solid solutions to international firms. The BAII and AMS team is actively pursuing significant marketing opportunities worldwide.

The Business of AMS

Industries and Markets

Financial Services Institutions

- ☐ Commercial banks
- ☐ Diversified financial companies
- ☐ Finance companies
- ☐ Investment banks and securities firms
- ☐ Thrift institutions

Insurance Companies

- ☐ Life
- ☐ Health
- ☐ Property and casualty

Civilian Federal Agencies

- ☐ Cabinet-level departments
- ☐ Executive agencies
- ☐ Judiciary and legislative branch
- ☐ Independent boards and commissions

Defense

- ☐ Military services
- ☐ Defense agencies
- ☐ Intelligence community

State, Local, and Other Governments

- ☐ States, state agencies, and Canadian provincial governments
- ☐ Cities
- ☐ Counties
- ☐ Canadian Federal government ministries

Colleges and Universities

- ☐ Universities
- ☐ Four-year colleges
- ☐ Medical centers
- ☐ Community colleges

School Districts

Telecommunications Firms

- ☐ Local telephone companies
- ☐ Wirefree telephone companies
- ☐ Long distance and international carriers
- ☐ Information services providers

Energy Companies

Major Companies in Other Industries

- ☐ Health care
- ☐ Utilities
- ☐ Consumer products
- ☐ Transportation
- ☐ Distribution

Delivering Solutions in Response to Client Needs

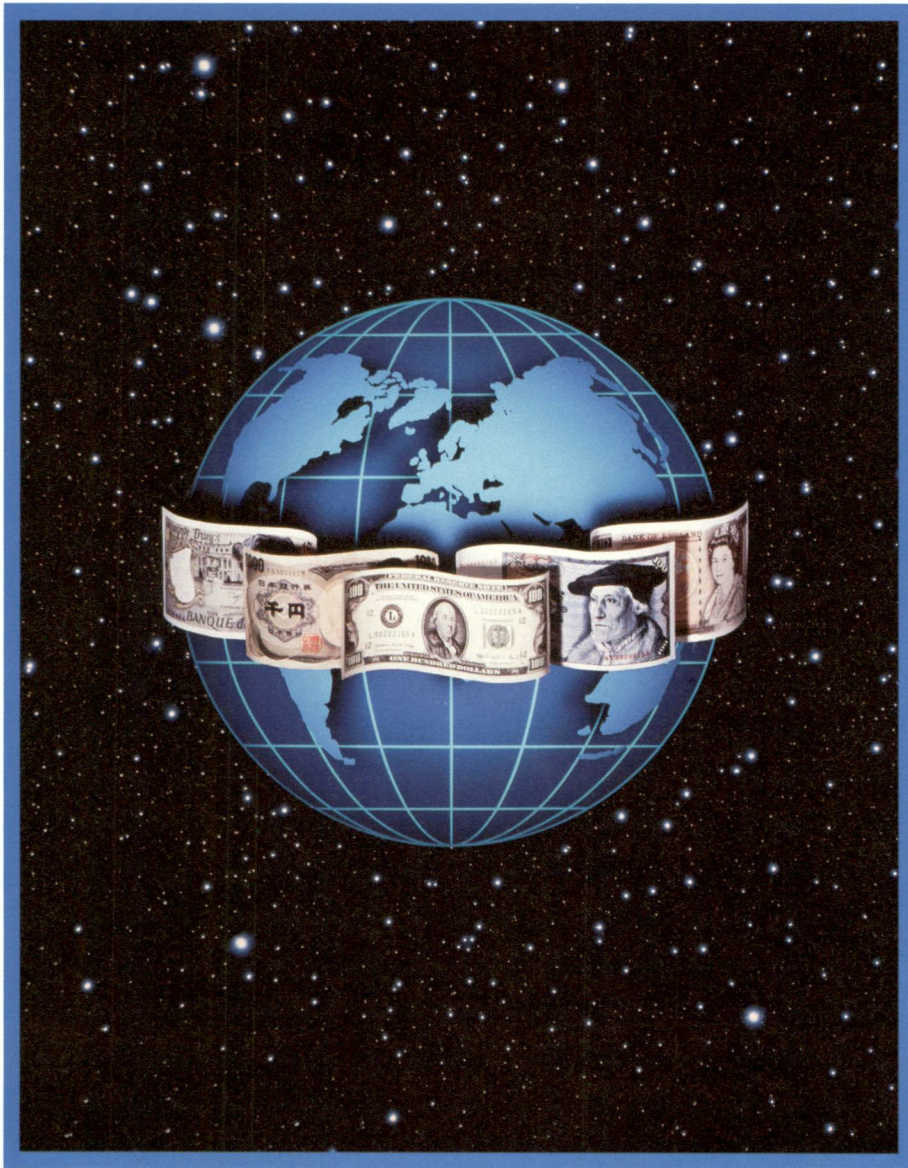
AMS develops comprehensive business solutions to meet each client's unique needs. In select cases, we work with clients to address needs common to specific industries and develop solutions that later serve as baseline solutions for other organizations within those industries. As a result, our systems and services evolve in response to the trends and objectives of specific clients and industries. Because clients in industries such as finance and telecommunications face an increasingly global and complex set of business issues, AMS forms project teams around the world to provide those clients with responsive, high-quality support.

AMS often designs a system to directly address a particular client's needs and later uses that system as a foundation for industry-specific applications. These

reusable applications allow AMS to provide solutions lower in cost, faster to implement, and with less risk than designing an entirely new system. For each client, AMS proposes the best combination of reusable applications and management and technical expertise to meet our client's objectives.

Specialized Client Training

Through our subsidiary, Data Base Management, Inc. (DBMI), we provide our clients with extensive training and technical consulting services for large-scale business applications. DBMI develops computer-based training for technical and other subjects such as job processes and procedures depending on clients' needs. Often, these services are included as part of a broader project to provide clients with a complete business solution.



Barclays

Banks providing international trade finance services depend on rapid turnaround, detailed documentation, and prompt payments to multiple parties in many currencies. This was the scenario faced by Barclays, one of the world's largest banks, as it constructed a strategic plan for its trade services business. To help develop and translate the plan into action, Barclays teamed with AMS. As the basis of the plan, AMS implemented TradeLine, a set of systems developed to automate the critical steps of the trade finance process.

Together, Barclays and AMS transformed a labor-intensive manual process of moving paper among 400 to 500 clerks in 20 locations to an integrated, fully-automated process. As a result, Barclays can reduce its cost base, improve control of its accounting process, minimize error and risk, improve efficiency, and provide more flexible, responsive customer service.

Currently, Barclays and AMS are working together on two major initiatives in Barclays' consumer credit and collections area.

The Business of AMS

Families of Applications

We have developed families of applications for specific functions in a number of industries. These families of applications include:

- ☐ Consumer credit management systems
- ☐ Corporate and international banking systems
- ☐ Federal financial systems
- ☐ State and local government management systems
- ☐ College and university management systems
- ☐ Local educational agency management systems
- ☐ Telecommunications industry management systems
- ☐ Energy industry management systems

Building Quality into Our Solutions

Our quality standards are based on achieving effective results for each client, maintaining a high-level of client satisfaction, establishing and retaining long-term client relationships, and preserving high-quality references. These standards form the very foundation of our business strategy because most of our business is built on relationships with and referrals from existing clients. Each year, approximately 85 percent of our business comes from clients we worked with in the previous year. This factor, more than any other, has sustained our strong growth rate for the past decade.

In 1990, AMS was cited in the business best-seller, *The Service Edge*, as one of the 101 companies across all industries that provide superb quality service. AMS was the only firm named from the computer services industry. According to *The Service Edge*, "AMS provides the kind of critical business-to-business intelligence [in its systems] that often goes unremarked for the exceptional service it really is."



Columbia University

In 1990, Columbia launched a five-year program to replace the university's administrative systems. Columbia's objectives: to improve service and information access and, in the long run, capitalize on the advantages of open systems.

As the cornerstone of this plan, Columbia selected AMS's Student Information System (SIS) to manage admissions, registration, and billing for 20,000 students across 16 schools. Now implemented, the system provides users throughout the university with up-to-date online information.

In addition, Columbia and AMS have worked together to retool Columbia's data center for the future and implement new systems development techniques. AMS and Columbia are also working together to add new features to SIS, including graphical user interface, document imaging, and client/server processing abilities, which we will later jointly market to other institutions.

The Business of AMS

Types of Projects

Management Consulting

- ☐ Using information technology to achieve business objectives
- ☐ Developing plans for using information technology
- ☐ Redesigning business processes

Information Technology Consulting

- ☐ Providing specialized expertise in computer hardware, communications, and software technologies
- ☐ Utilizing new technologies
- ☐ Using systems development productivity tools and methodologies

Implementation of AMS's Applications

- ☐ Designing the use of the applications
- ☐ Installing applications
- ☐ Performing data processing implementation
- ☐ Training users and technical personnel
- ☐ Redesigning work flows and organizations

Design and Development of Strategic Systems

- ☐ Developing solutions to key business issues
- ☐ Employing high-productivity development tools

Training and Education Services

- ☐ Developing instructor-led courses on computer application technologies
- ☐ Developing computer-based training (CBT) on technical subjects
- ☐ Developing CBT programs for system users

Defense Systems Engineering

- ☐ Employing high-technology logistics and maintenance engineering techniques
- ☐ Analyzing weapon systems acquisition issues
- ☐ Performing command, control, communications, and intelligence projects

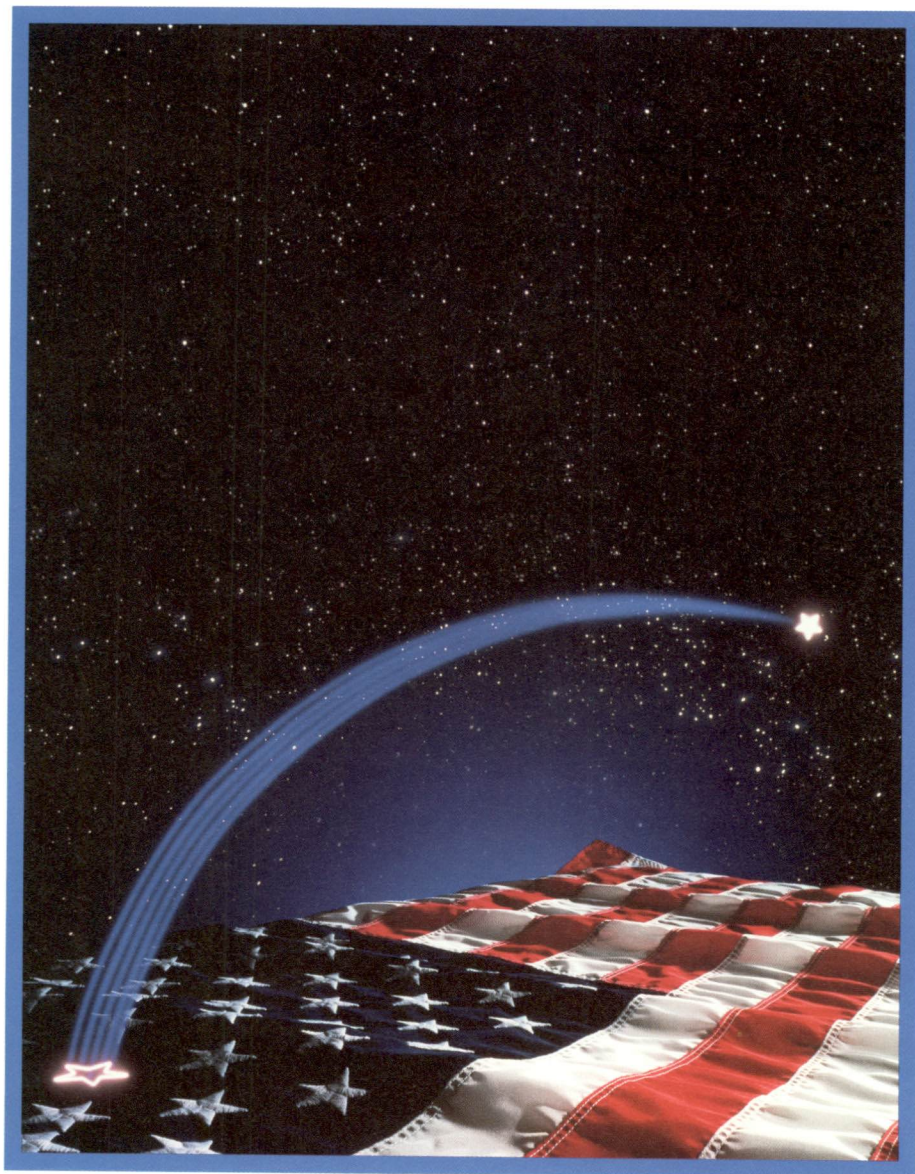
Management Skill—AMS's Foundation for Excellence

Another key to AMS's success is our project management skill, refined over many years of working with clients on large-scale systems projects critical to our clients' success. We have successfully developed and brought into operation more than 600 major systems for our clients.

AMS's standard approach is to focus on a client's business, operational, and technical situation through a combination of management talent, industry-specific expertise, and technical knowledge. Our success in implementing information technology solutions is based on our commitment to mastering

the skills and knowledge most helpful to our clients, both today and in the future.

AMS manages systems development and integration projects of all sizes with varying levels of client involvement. In most cases, AMS team members work together with a client team from both MIS and end-user communities.



Internal Revenue Service

To better serve the complex revenue needs of the nation, the U.S. Treasury Department's Internal Revenue Service (IRS) is consolidating and modernizing the administrative operations of its headquarters, regional, and local offices.

The agency joined forces with AMS to implement a new administrative accounting system built upon AMS's Federal Financial System. Now, the IRS's 130,000 employees, who collect nearly \$1 trillion in tax revenues annually, function under a single, integrated system for budget and financial management. The IRS and AMS have also teamed to develop enhanced systems for capturing personnel costs, formulating budgets, and tracking employee relocation expenses, as well as to update IRS internal procedure manuals.

As a result of its recent efforts, the IRS will help improve the administrative productivity and efficiency of the Federal government.

The Business of AMS

Areas of Technical Expertise

- ☐ Computer-Aided Software Engineering (CASE)
- ☐ Cooperative and Distributed Processing
- ☐ Document Imaging
- ☐ Executive Information Systems
- ☐ Expert Systems
- ☐ Geographic Information Systems
- ☐ Graphical User Interfaces
- ☐ Information Resources Management/Data Administration
- ☐ Large Data Base Applications
- ☐ Multimedia
- ☐ Network-based Applications
- ☐ Network Integration
- ☐ Object-oriented Methods
- ☐ Open Systems
- ☐ Pen-based Computing
- ☐ Relational Data Base Management Systems
- ☐ Software Quality Engineering
- ☐ System Life-cycle Metrics
- ☐ Systems Application Architecture (SAA)

Experts in the Full Range of Technologies

AMS works with high-volume mainframe complexes, wide-area networks, and client/server architectures. For example, we have developed a large-scale mainframe-based system that processes over 800,000 online transactions per day for a telecommunications client. We have also implemented a client/server-based system to automate a bank's international trade finance services, an extremely complex low-volume application.

AMS technical specialists are proficient in the full range of emerging technologies, such as image management, cooperative processing, multimedia, expert systems, pen-based computing, and graphical user interfaces. Because AMS

invests in mastering new technologies as they evolve, our clients reap the full benefit of the highest levels of technological expertise. We have formed a unique infrastructure to leverage the knowledge and experience of our senior technologists by making it possible for AMS project teams, and our clients, to draw upon their collective expertise.

By working in a broad range of computing environments—from focused applications to enterprise-wide, network-based solutions—AMS has the depth of understanding to implement solutions across diverse technical platforms as well as in all communications environments.



State of Colorado

In 1987, the State of Colorado decided to upgrade its financial management by replacing all state budget tracking, accounting, and reporting systems with an integrated information system. The goal of the new system was to satisfy the accounting and financial reporting needs of the central agencies as well as the program management needs of the operating agencies.

As the cornerstone of the new Colorado Financial Reporting System (COFRS), state officials selected AMS's Government Financial System (GFS®). GFS is designed to meet the needs of complex governments, especially those with projects requiring extensive modifications and enhancements.

COFRS is now successfully implemented for all state agencies and is helping the State meet the increasing challenge of managing limited resources as demands increase. Together with AMS, the State of Colorado is moving forward with plans to automate its purchasing, inventory, and labor data collection functions within a single integrated system.

The Business of AMS

Methods and Tools

Life-cycle Productivity System Methods

- ☐ Business Process Redesign
- ☐ Strategic Systems Planning
- ☐ Business System Concept
- ☐ Custom System Development
- ☐ System Support
- ☐ Product-based Systems Implementation
- ☐ Rapid Development Methodology
- ☐ Application Design Quality Model
- ☐ Joint Application Design
- ☐ Software Process Assessment

Life-cycle Productivity System Tools

- ☐ Strategic Systems Planner
- ☐ System Designer
- ☐ System Developer
- ☐ CORE Foundation Software
- ☐ Life-cycle Project Manager

Methodology and Tools— Proven Techniques

We back our industry-specific and technical expertise with proven, systematic methods and information technology for developing high-quality systems. Our Life-cycle Productivity System[™], critical to development and support activities, encompasses both our methodology (LPS Methodology) and computer-aided software engineering tools, including our CORE Foundation Software[®].

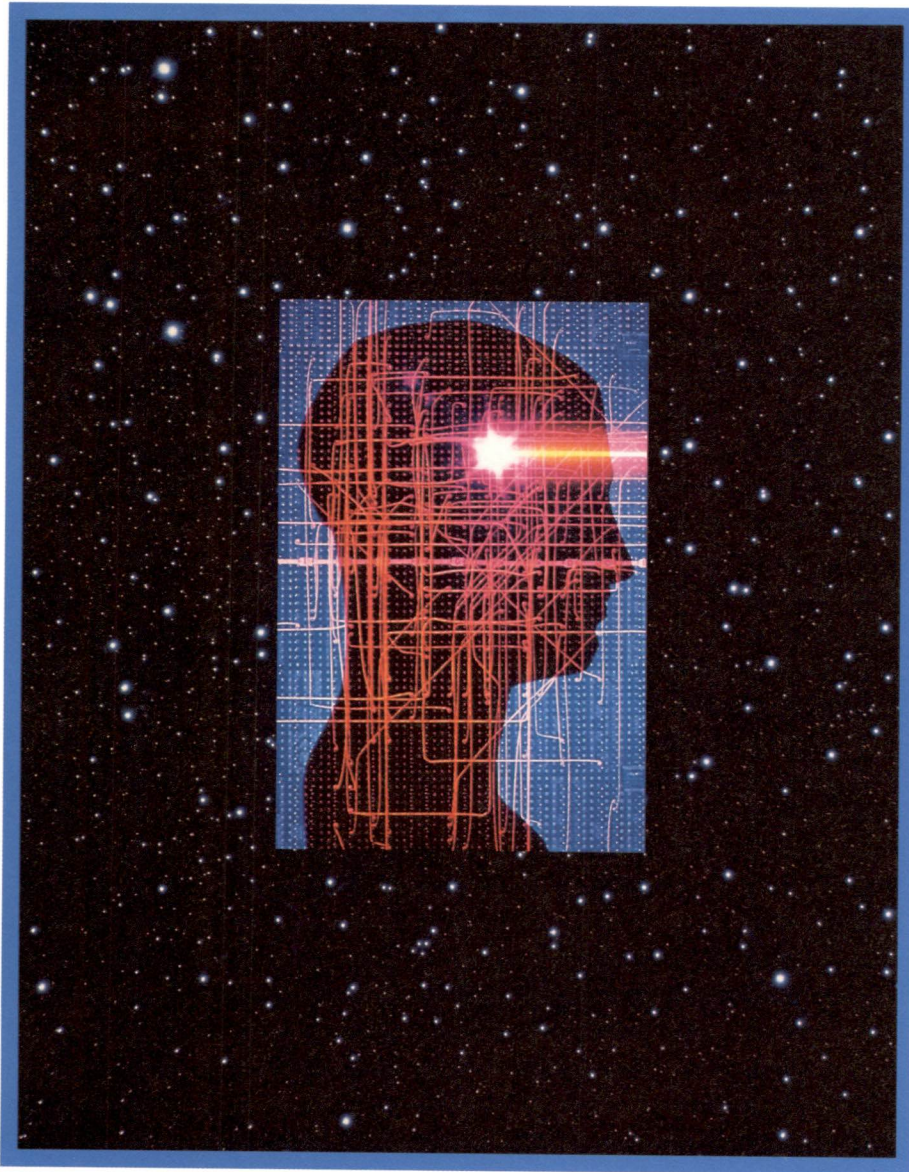
The LPS Methodology incorporates unique concepts, such as our *design first* approach, as well as industry standard techniques. The *design first* strategy provides for the development of a high-level system model early enough in the application life-cycle to identify the best functional and technological solutions.

We continue to expand our methodology and CORE

to meet the challenges of open systems, object-orientation, and other new technologies.

In 1991, we completed the Application Design Quality Model, an organized collection of over 500 design techniques and guidelines to ensure high-quality systems development. In addition, AMS is licensed by the Carnegie Mellon University Software Engineering Institute to perform software process assessments around the world. In these assessments, we identify strengths and weaknesses and initiate improvements in an organization's software development process.

Our methodology, tools, and techniques are not rigid. Rather, we adapt to the changing needs of our clients and the expanding range of technologies their systems require.



AT&T Universal Card

In 1990, AT&T achieved unprecedented success when it launched the AT&T Universal Card, a combination credit card and calling card. Its success was immediate—more than 270,000 calls in the first 24 hours—and the company quickly challenged the information technology in place at the time. AT&T Universal Card Services turned to an AMS-led team for help in determining the information technology necessary to achieve the company's strategic goals. Together, they are guiding the direction of UNIVERSYS—the next generation of systems for AT&T Universal Card Services.

When in place, UNIVERSYS will be a fully-integrated system that constantly analyzes information, feeds it back to decision-makers, and drives all critical business functions. UNIVERSYS will provide a timely and accurate one-stop source for all service needs and will enable AT&T Universal Card Services to remain steadfast on its path of continuous improvement and superior quality. In the process, AT&T Universal Card Services has emerged as a leader in the effective use of information technology.

Awards for Achievement

Fourth Award Winners

David M. Carlson, Kmart Corporation

He developed an open systems architecture that addressed retailers' three biggest problems: long checkout lines, high inventory costs, and cumbersome credit authorization.

Richard A. Detweiler, Drew University

He integrated information technology into the liberal arts education at Drew. Students, faculty, and administrators have access to extensive information libraries, voice and electronic mail, application tools, and computer-based training.

John F. Muratore, NASA, Johnson Space Center

He incorporated expert systems to aid the decision-making process of flight controllers at Mission Control. His team also laid the groundwork for future knowledge-based systems at NASA.

John W. Turko, Kennametal Inc.

He implemented new information systems that changed the company from manufacturing-oriented to customer-focused. The change dramatically increased company revenues, customer satisfaction, and Kennametal's world standing in the metalworking industry.

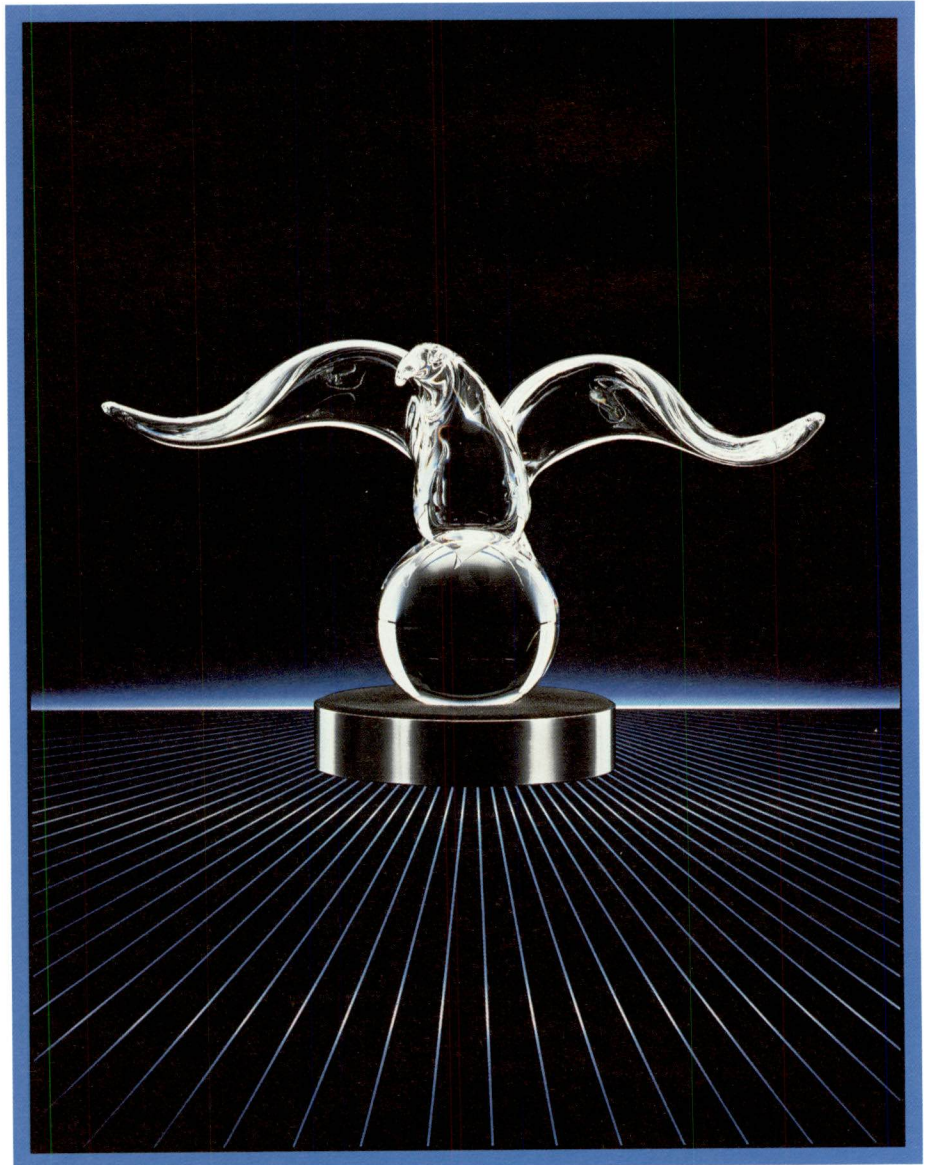
C. Diana Whitehead, Pacific Bell

She deployed the largest customer service application in the telecommunications industry. The window- and workstation-driven network is now a standard for customer service representatives at Pacific Bell.

The honorable mentions were:

John K. Nagata, Los Angeles Unified School District

James L. Zucco, Jr., MCI Telecommunications Corporation



A symbol of excellence, the Steuben eagle is presented to all winners of the Awards for Achievement in Managing Information Technology, in recognition of the outstanding contributions they have made to their organizations through the effective use of computer and communications technology.

Awards for Achievement

In 1987, AMS and Carnegie Mellon University's Graduate School of Industrial Administration joined forces to establish the Awards for Achievement in Managing Information Technology. The Awards recognize individuals who, through the effective use of information technology, have made outstanding contributions to their organizations.

Each year, chief executives from all sectors of the economy recognize their senior information systems executives and professionals by nominating them. By doing so, they not only position their organizations as front-runners in information technology, but they demonstrate that, when applied effectively, information technology has a significant impact on an organization's performance. Winners share a common ability to generate creative ideas and provide the leadership to turn their concepts into realities.

In May 1991, in honor of the Fourth Award winners, Dr. Rosabeth Moss Kanter, a professor at the Harvard Business School and Editor of the *Harvard Business Review*, addressed an audience of senior executives from leading organizations and the media. Dr. Kanter spoke about nurturing the entrepreneurial spirit within established organizations. "The skills of innovators need to be encouraged at all levels if U.S. companies are to remain competitive," she noted. "Organizations of all sizes must become more flexible, more cooperative, and more innovative—taking advantage of ideas generated through the ranks, working better across functional lines, and learning from their allies and partners."

The Fifth Award winners will be announced in November 1992.

Third Award Winners

Jane E. Bailey, Commonwealth of Virginia,
Department of Taxation

R.W. (Bill) Eaton, Levi Strauss & Co.

Paul F. Glaser, Citicorp (*Retired*)

James C. Grant, Royal Bank of Canada
(*Retired*)

G. Nichols (Nick) Simonds, Chrysler Corp.
(currently with Honeywell Inc.)

Second Award Winners

George A. L. David, United Technologies Corp.

George J. Feeney, Dun & Bradstreet Corp.

Charles S. Feld, Frito-Lay, Inc.

Phyllis A. Gardner, U.S. Department of Justice
(currently with Steptoe & Johnson)

John P. Singleton, Security Pacific Corp.

First Award Winners

Joseph T. Brophy, Travelers Insurance

Michael P. Cruskie, State of New York
(currently with Charter Account Systems)

C. Clinton (Clint) Joyce, Albertson's Inc.
(*Retired*)

Ron J. Ponder, Federal Express
(currently with Sprint Corporation)

Michael R. Zucchini, General Re Corp.
(currently with Fleet/Norstar Financial Group)

Financial Statements

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and Stockholders, American Management Systems, Incorporated

We have audited, in accordance with generally accepted auditing standards, the consolidated financial statements of American Management Systems, Incorporated and its subsidiaries as of December 31, 1991 and 1990 and for each of the three years in the period ended December 31, 1991 appearing in Exhibit 13 to the 1991 Annual Report on Form 10-K (which statements are not presented herein); and in our report dated February 14, 1992, we expressed an unqualified opinion on those consolidated financial statements.

We have also previously audited, in accordance with generally accepted auditing standards, the consolidated financial statements of American Management Systems, Incorporated and its subsidiaries as of December 31, 1989, 1988, and 1987, and for the years then ended (none of which are presented herein); and in our report dated February 14, 1990, we expressed an unqualified opinion on those consolidated financial statements.

In our opinion, the information set forth in the accompanying consolidated balance sheets as of December 31, 1991 and 1990 and the selected financial data included in the financial summary for each of the five years in the period ended December 31, 1991, when read in conjunction with the consolidated financial statements from which it has been derived, is fairly stated in all material respects in relation thereto.

Price Waterhouse

Washington, D. C.
February 14, 1992

FIVE-YEAR FINANCIAL SUMMARY

Year ended December 31 (In thousands except share and per share data)	1991	1990	1989	1988	1987
OPERATING RESULTS					
Services and Products Revenues	\$247,128	\$226,480	\$190,059	\$174,998	\$145,171
Total Revenues	285,167	261,929	225,303	213,305	174,308
Client Project Expenses	153,230	141,065	128,410	127,536	99,241
Other Operating Expenses	94,555	83,335	75,667	65,260	52,233
Corporate Expenses	16,487	18,302	11,831	8,899	9,418
Total Operating Expenses	264,272	242,702	215,908	201,695	160,892
Income from Operations	20,895	19,227	9,395	11,610	13,416
Other (Income) Expenses	(112)	29	(82)	1,118	371
Income Before Income Taxes	21,007	19,198	9,477	10,492	13,045
Income Taxes	7,912	7,218	3,250	3,104	5,463
Net Income	13,095	11,980	6,227	7,388	7,582
Dividends and Accretion on Series B Preferred Stock	1,523	1,532	448		
Net Income to Common Shareholders	11,572	10,448	5,779	7,388	7,582
PER COMMON SHARE DATA					
Net Income per Common Share	\$ 1.12	\$ 1.04	\$ 0.56	\$ 0.71	\$ 0.73
Weighted Average Shares and Equivalents	10,358,798	10,075,678	10,390,553	10,387,851	10,410,684
Common Shares Outstanding at Year End	9,980,333	9,678,032	9,902,993	9,897,920	9,641,591
FINANCIAL POSITION					
Total Assets	\$146,463	\$133,558	\$124,290	\$102,858	\$ 82,891
Fixed Assets, Net	17,191	15,337	14,614	13,947	11,840
Working Capital	55,703	47,443	48,990	29,581	21,762
Noncurrent Liabilities	11,550	14,799	17,189	17,542	11,168
Redeemable Preferred Stock	17,578	17,410	17,420		
Other Stockholders' Equity	69,411	54,045	48,095	43,778	34,467

Financial Statements

American Management Systems, Inc.

CONSOLIDATED BALANCE SHEETS

December 31 (In thousands)	1991	1990
ASSETS		
CURRENT ASSETS		
Cash and Cash Equivalents	\$ 28,440	\$ 25,428
Accounts and Notes Receivable	72,176	67,593
Prepaid Expenses and Other Current Assets	3,011	1,726
	<u>103,627</u>	<u>94,747</u>
FIXED ASSETS		
Equipment	34,062	35,272
Furniture and Fixtures	6,761	5,829
Leasehold Improvements	9,015	8,230
	<u>49,838</u>	<u>49,331</u>
Accumulated Depreciation and Amortization	<u>(32,647)</u>	<u>(33,994)</u>
	<u>17,191</u>	<u>15,337</u>
OTHER ASSETS		
Purchased and Developed Computer Software (Net of Accumulated Amortization of \$15,282,000 and \$11,248,000)	19,856	15,352
Deferred Royalty Expenses (Net of Accumulated Amortization of \$2,001,000 and \$1,615,000)	859	1,245
Intangibles (Net of Accumulated Amortization of \$768,000 and \$613,000)	2,984	3,082
Other Assets (Net of Accumulated Amortization of \$650,000 and \$895,000)	1,946	3,795
	<u>25,645</u>	<u>23,474</u>
TOTAL ASSETS	<u>\$146,463</u>	<u>\$133,558</u>

CONSOLIDATED BALANCE SHEETS

December 31 (In thousands)	1991	1990
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Notes Payable and Capitalized Lease Obligations	\$ 1,936	\$ 1,816
Accounts Payable	4,563	4,818
Accrued Incentive Compensation	7,108	5,597
Other Accrued Compensation and Related Items	9,204	9,991
Other Accrued Liabilities	5,531	7,064
Income Taxes Payable	229	53
	<u>28,571</u>	<u>29,339</u>
Deferred Income Taxes	19,353	17,965
	<u>47,924</u>	<u>47,304</u>
NONCURRENT LIABILITIES		
Notes Payable and Capitalized Lease Obligations	10,016	12,269
Other Accrued Liabilities	1,130	1,660
Deferred Income Taxes	404	870
	<u>11,550</u>	<u>14,799</u>
TOTAL LIABILITIES	59,474	62,103
REDEEMABLE CONVERTIBLE PREFERRED STOCK		
Preferred Stock (Series B, 7.5% Cumulative Dividend, \$0.10 Par Value, 2,500,000 Shares Authorized, 1,170,000 Issued and Outstanding)	17,526	17,354
Accrued Dividends	52	56
	<u>17,578</u>	<u>17,410</u>
OTHER STOCKHOLDERS' EQUITY		
Preferred Stock (\$0.10 Par Value, 1,500,000 Shares Authorized, None Issued or Outstanding)		
Common Stock (\$0.01 Par Value, 40,000,000 Shares Authorized, 12,036,585 and 11,705,149 Issued and 9,980,333 and 9,678,032 Outstanding)	120	117
Capital in Excess of Par Value	21,903	17,229
Retained Earnings	62,102	50,530
Currency Translation Adjustment	13	(99)
Common Stock in Treasury, at Cost (2,056,252 and 2,027,117 Shares)	(14,727)	(13,732)
	<u>69,411</u>	<u>54,045</u>
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$146,463	\$133,558

Revenues by Market

Year Ended December 31 (In thousands)	1987	1988	1989	1990	1991
Services and Products Revenues					
Financial Services Institutions	\$ 31,857	\$ 37,155	\$ 40,590	\$ 50,345	\$ 49,315
Federal Government Agencies	51,542	62,022	54,603	55,764	66,917
State and Local Governments and					
Education	27,578	32,148	44,253	48,997	53,446
Telecommunications Firms	6,873	11,254	15,024	31,432	32,418
Energy Industry Clients	5,876	9,108	11,557	10,799	15,294
Other Corporate Clients	21,445	23,311	24,032	29,143	29,738
Total Services and Products Revenues	145,171	174,998	190,059	226,480	247,128
Reimbursed Expenses Revenues	29,137	38,307	35,244	35,449	38,039
Total Revenues	<u>\$174,308</u>	<u>\$213,305</u>	<u>\$225,303</u>	<u>\$261,929</u>	<u>\$285,167</u>

General Information

Transfer Agent and Registrar

Mellon Securities Trust Company
Ridgefield, New Jersey

Independent Accountants

Price Waterhouse
Washington, D.C.

Counsel

Shaw, Pittman, Potts & Trowbridge
Washington, D.C.

Stockholder Financial Statements and 10-K Information

Financial inquiries should be directed to Frank A. Nicolai, Secretary of the Corporation, American Management Systems, Inc., 1777 North Kent Street, Arlington, Virginia 22209. Telephone (703) 841-6000. Complimentary copies of the Company's complete audited financial statements and its Annual Report on Form 10-K to the Securities and Exchange Commission will be provided upon written request.

Annual Meeting

The annual stockholders meeting has been set for May 8, 1992 in Arlington, Virginia for stockholders of record on March 23, 1992.

Directors and Management

BOARD OF DIRECTORS

- **Steven R. Fenster, *Thomas Henry Carroll-Ford Foundation Visiting Professor, Harvard University Graduate School of Business Administration*
- **James J. Forese, *IBM Vice President and Member, Corporate Management Board, IBM Corporation*
- * Patrick W. Gross, *Founder; Vice Chairman of the Board*
- **W. Walker Lewis, *Chairman, Mercer Management Consulting, Inc.*
- **Dorothy Leonard-Barton, *Associate Professor, Harvard University Graduate School of Business Administration*
- **Frederic V. Malek, *Vice Chairman, Northwest Airlines*
- * Frank A. Nicolai, *Founder; Executive Vice President*
- * Charles O. Rossotti, *Founder; Chairman of the Board*
- **Gordon R. Worley, *Retired Executive Vice President, Montgomery Ward and Company*

* Member of Executive Committee

** Member of Audit and Compensation Committees

MANAGING DIRECTORS AND PRINCIPAL EXECUTIVE OFFICERS

Charles O. Rossotti, *Chairman*
Patrick W. Gross, *Vice Chairman*
Frank A. Nicolai, *Executive Vice President,
Treasurer and Secretary*

EXECUTIVE VICE PRESIDENTS

Paul A. Brands
Fred L. Forman
Philip M. Giuntini

VICE PRESIDENTS

Frank G. Andrews
Mark S. Andrews
Gregory M. Barry
Harry O. Barschdorf
Hull Belmore
John A.G. Berkin
Judy D. Blair
Jacqueline J. Bravo
Robert C. Brayton
Zipora Brown
Robert H. Butler
Joseph A. Chalmers
S. Chandramouli
Harry Contos
Richard L. Crosby
Donna E. Deeley

Normand D. Desmarais
Paul D. DiGiammarino
Peter F. DiGiammarino
Howard M. Drourr
Reginald C. Foster
Susan J. French
Thomas A. Gilberti
Jerrold M. Grochow
Milton S. Hess
Robert A. Hoover
Paul G. Hudecek
Robert B. Hupp, Jr.
Robert E. Hylas
Douglas C. Ingling
Winder G. Keating, Jr.
Ross C. Kory

Robert O. Kramer
James E. Marshall, *Controller*
Timothy D. Matlack
Edward J. McCabe
Carolyn M. McGee
Howard Miller
Donna S. Morea
Linda K. Morse
Michael S. Patitucci, Jr.
Kincey B. Potter
William M. Purdy
Richard A. Reid
William W. Renshaw
Randall J. Roth
Richard S. Rothstein
Larry R. Seidel

Colin L. Shaw
James W. Sheaffer
Albert H. Smith, Jr.
Bertram D. Smith, Jr.
Raymond F. Strecker
Harvey I. Susswein
E. Marie Taylor
Tim Taylor
Ann M. Thornton
James A. Ungerleider
Jacob K. Varghese
Betsy E. Walker
Richard B. Witschonke

SENIOR CONSULTANTS

Janet Landtbom McCabe
Steven C. Mutschler

AMS MANAGEMENT SYSTEMS CANADA INC., Colin L. Shaw, *President*

AMERICAN MANAGEMENT SYSTEMS EUROPE, James W. Sheaffer, *Senior Corporate Executive • Europe*

AMS Management Systems Deutschland GmbH, James W. Sheaffer, *Geschäftsführer*

AMS Management Systems Europe, S.A./N.V., James W. Sheaffer, *Managing Director*

AMS Management Systems U.K. Ltd., John A.G. Berkin, *Managing Director*

DATA BASE MANAGEMENT, INC.: Matthew L. Reiser, *President, Consulting Services*

Joseph E. Wehr, Jr., *President, Training Services*

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6000 Frankfurt 1
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49-69-24 55 11 99 FAX

NORTH AMERICAN SUBSIDIARIES

Data Base Management, Inc. AMS Courseware Developers

300 Chapel Road
Manchester, Connecticut 06040
(203) 646-3264
(800) 232-3264
(203) 643-9629 FAX

AMS Management Systems Canada Inc.

180 Elgin Street
Ottawa, Ontario
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(613) 232-0324 FAX

AMS Operations Corporation

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(303) 232-4618 FAX

AMS Technical Systems, Inc.

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(703) 276-3295 FAX

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Arlington, VA
Boston, MA
Bremerton, WA
Chesapeake, VA
Chicago, IL
Dallas, TX
Detroit, MI
Emeryville, CA
Houston, TX
Lakewood, CO
Los Angeles, CA
Manchester, CT
Montreal, Canada
New York, NY
Ottawa, Canada
Port Hueneme, CA
Portsmouth, NH
Redwood City, CA
Richmond, VA
Roseland, NJ
San Diego, CA
San Francisco, CA
Sarasota, FL
Toronto, Canada

EUROPEAN OFFICES

Brussels, Belgium
Düsseldorf, Germany
Frankfurt, Germany
London, England



THE WHITE HOUSE
WASHINGTON

June 25, 1992

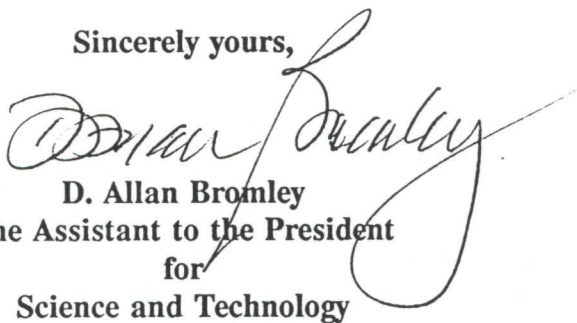
Dear Messrs Sullivan and Rossotti:

Thank you for your kind letter of May 13 inviting me to be the keynote speaker at the Fifth Awards for Achievement in Managing Information Technology scheduled to be held on November 10 in New York City. I apologize for the much belated response.

Because my schedule has become increasingly consumed with election year activities as well as my regular duties, I must regretfully decline.

Thank you for thinking of me. With best wishes,

Sincerely yours,



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

Messrs Robert S. Sullivan and Charles O. Rossotti
Carnegie Mellon University
1777 North Kent Street
Arlington, Virginia 22209

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9201635

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: BICKELL, Alan D.: HEWLETT PACKARD

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/30/92

SUBJECT: HE IS WRITING TO REQUEST AN ADVANCE COPY OF DR.
BROMLEY'S SPEECH AT PECC IX.

DIRECTORATE

STAFF

ASSIGNED: DIRECTOR'S OFFICE

ASSIGNED:

ACTION

REQUIRED: AS NECESSARY

STAFF

ACT

SENDER'S DUE DATE:

OSTP DUE DATE: 05/14/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

Olson

EXT: 2734

REMARKS:

Returned call + told him that text would not
be available until right before event (if
then).

Shirley Olson

OSTP RECEIVED: 05/06/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

CENTRAL FILES:

Steve O.
I told them that
I don't provide
advance copies. He
keeps begging!
5/18/92



Hewlett-Packard Company
Intercontinental Operations
3495 Deer Creek Road
Palo Alto, California 94304-1316

Mailing Address
PO Box 10495
Palo Alto, CA 94303-0896
415/857-5027
Fax 415/857-7045
Telex 278813 HPPA UR



RECEIVED

92 MAY 6 P4:47

OSTP
MAIL ROOM

April 30, 1992

Dr. D. Allan Bromley
Assistant to the President
for Science and Technology
The White House, Washington

FAX 202 395 3261

Dear Dr. Bromley:

I was very pleased that we were able to connect on the telephone yesterday. Let me confirm our agreements. First of all, from your schedule it appears that time at Hewlett-Packard on the afternoon of September 23 won't be possible. We will anticipate your mid-day arrival and will arrange the necessary limo service, coordinating with your office as the time draws near. Should your plans change and the time becomes available for an HP visit, please let us know.

The title of your talk, at least for purposes of publishing the agenda, will be "U.S. Science and Technology Policy in the 90s". Given the PECC IX theme, Open Regionalism, I encourage you to go beyond a review of expected U.S. science and technology policy and comment on the likely global implications this might have. In this regard I recently ran across an article in Business Tokyo entitled "Rethinking America's Technology Policy" which you might find of interest.

It would be very much appreciated if you could make a copy of your talk available in advance of the meeting, as I would like to circulate it to the other panel members. We will similarly be passing copies of their presentations to you.

Dr. Bromley, we are honored that you are able to join us. I look forward to the opportunity to meet you in person, and want to thank you for your support of PECC IX and its concurrent session on science and technology.

Yours sincerely,



Alan D. Bickell
Vice President
Managing Director
Intercontinental Operations

ADB/bb

Attachment

RETHINKING AMERICA'S TECHNOLOGY POLICY

An influential
Pentagon agency
has been a successful
promoter of
high-tech companies.
But should it be made
the cornerstone
of a Japan-style
industrial strategy?



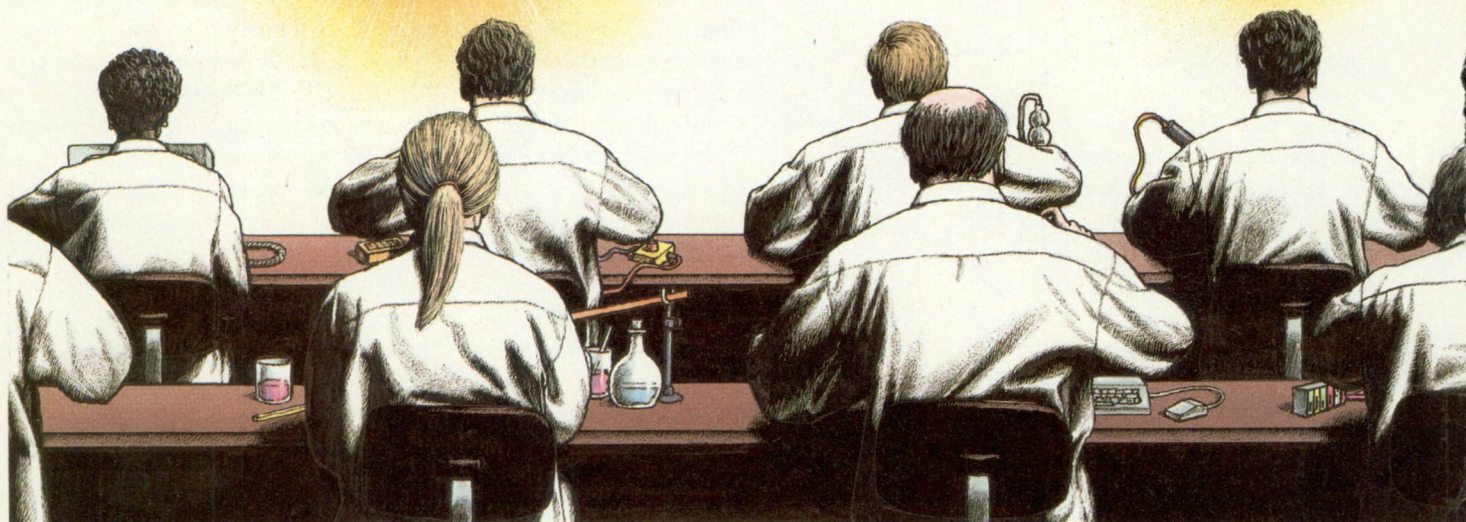
BY KRISTIN KNAUTH

THIS ELECTION YEAR, POLITICAL PUNDITS and candidates, including President Bush, are blaming Tokyo for everything from the bilateral trade deficit to the U.S. recession. But around the country, one Japanese policy has drawn more praise than criticism: government support for the development of new technologies. On the stump, Democratic contender Paul Tsongas has been calling for strategic investments in emerging technologies. Many businesspeople agree. "Market economies have their limits," says Robert Frosch, vice president in charge of research for General Motors Research Laboratories in Warren, Michigan.

The end of the cold war may signal the advent of global private-sector battles in new technologies. As a result, a growing number of American leaders want Washington to bring together its hodgepodge of military and civilian research-and-development programs under one roof. A favorite foreign model is Japan's powerful Ministry of International Trade and Industry (MITI), which has organized companies in the automobile, electronics and semiconductor industries.

In America, that mission is to some extent being fulfilled by a little-known federal government arm: the Defense Advanced Research Projects Agency (DARPA), founded in 1958. A long list of commercially successful innovations, from packet-switched telecommunications to artificial intelligence, got their early funding from this small Pentagon agency. In the 1970s, federal contracts gave a boost to fledgling Sun Microsystems Inc., now a leading computer workstation maker. "DARPA's fingerprints are all over the technologies of the Western world," says Frosch, a former DARPA official.

Science advances, viewed by many as the country's ultimate comparative advantage, have been a driving force in





The customer is God: Japanese buyers from Nippon Suisan inspect frozen snow crabs at Arctic Alaska Fisheries' quality-control lab in Seattle

the 12-employee firm to improve its models for cars and trucks, says president Don Lewis. When Japanese dealers, who install the devices as pricey options, complained that installation took an hour and required drilling holes in their fussy customers' brand-new vehicles, C.L.I. had an American supplier develop a tape to replace the bolts, cutting the time to 20 minutes.

More important, catering to customers has pushed the firm to create new products. By systematically following the advice of its Japanese distributors, C.L.I. has expanded into a number of markets. "We started out with two models, and we just introduced our 23rd," says Lewis. "Now we make models for everything from heavy construction equipment to ski lifts."

Lewis believes that the ability to please demanding Japanese clients will help C.L.I. wherever it markets its products. "We felt

that if we could crack the Japanese market and prove ourselves there, the world would beat a path to our door," he says. "Frankly, it's the smartest thing we ever did."

Goaded by competition with Japan, American companies are turning a corner in the

quest for quality. But mastering a few techniques isn't enough. U.S. firms will have to match the Japanese commitment to the the most demanding tenet of the quality gospel: unending effort.

"The tendency in American culture is to think in plateaus — to reach a goal and then coast," says Frank O'Brien, director of marketing at Donnelly Corp., a Michigan maker of mirror and lighting

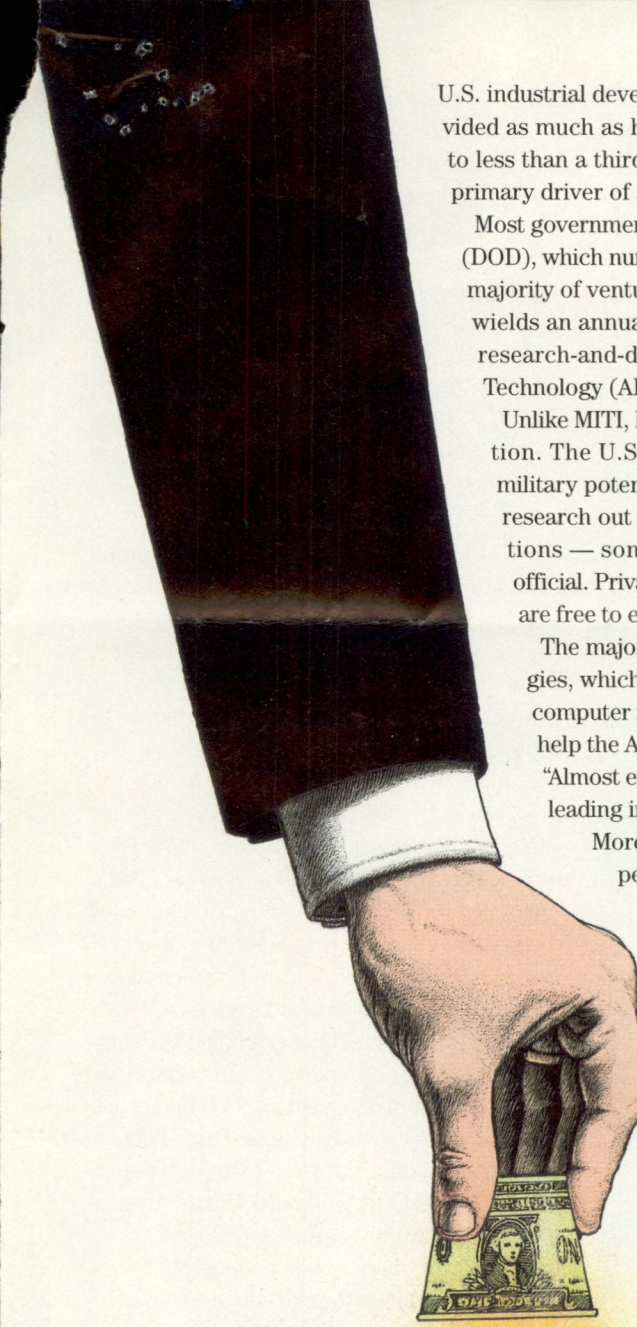
systems for U.S. and Japanese automakers that has had a quality program since the late 1940s. "The Japanese way is to have an infinite target that can never be reached."

Popularized in the United States under the buzzword *kaizen* (continuous improve-

ment), this commitment is what separates serious companies from faddists who dabble in quality circles. On one level, large corporations with their vast resources are better positioned for this relentless pursuit. It takes money and time to train workers, analyze processes and send people to Japan on benchmarking tours. Yet smaller firms have advantages as well. "We have shorter lines of communication and less inertia," says Fusion Systems president Donald Spero. "It's easier to turn a speedboat than an ocean liner."

Companies that ignore the quality movement risk missing out on the gains to be had in innovation, efficiency and customer satisfaction — not to mention a healthier bottom line. But today's ruthlessly competitive global economy offers an even more compelling reason to join the crusade. "Forget about success," says Cummins of Air Products Asia. "These days total quality has become a prerequisite for survival. Companies that do not embrace quality in everything they do simply won't be in business by the end of the decade." ●

**"FORGET ABOUT
SUCCESS.
THESE DAYS
TOTAL QUALITY
HAS BECOME
A PREREQUISITE
FOR SURVIVAL"**

A large, detailed illustration of a hand in a dark suit sleeve holding a one-dollar bill. The hand is positioned as if about to drop the bill. Below the bill, two glowing lightbulbs are shown, suggesting ideas or inspiration.

U.S. industrial development. Between World War II and 1960, the government provided as much as half of all American R&D funding. Today that figure has shrunk to less than a third. Commercial potential has replaced military imperative as the primary driver of advanced electronics.

Most government support for R&D has come through the Department of Defense (DOD), which nurtures technologies with direct military uses. And within DOD, the majority of venture capital for cutting-edge firms is sourced from DARPA, which wields an annual budget of about \$1.4 billion. This gives it 1½ times as much research-and-development money as MITI's Agency of Industrial Science and Technology (AIST), DARPA's closest Japanese equivalent (*see chart, next page*).

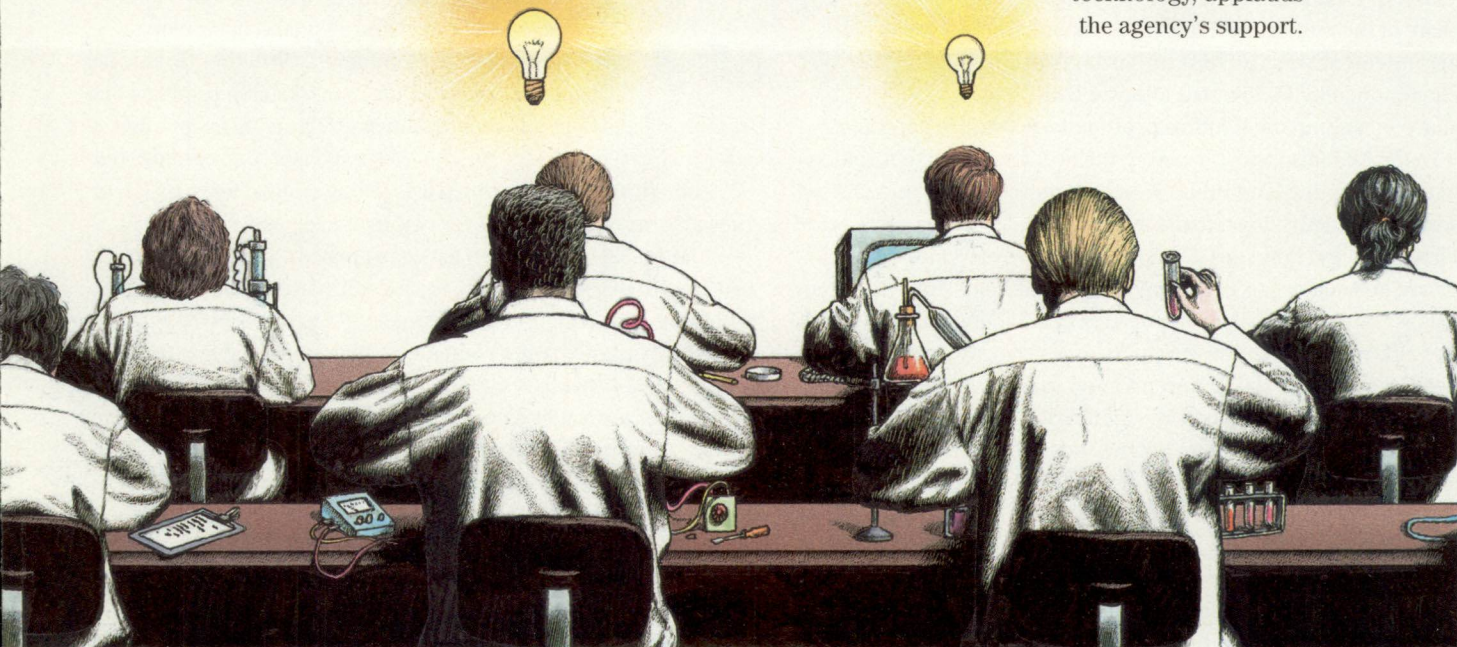
Unlike MITI, however, DARPA has no mandate to guide public-private cooperation. The U.S. agency scours the country for emerging technologies with military potential. When a promising new idea surfaces, DARPA contracts the research out to universities, government labs, a Pentagon branch or corporations — sometimes with fifty-fifty cost sharing, according to an agency official. Private firms direct their research to fulfill DARPA's military needs, but are free to expand upon the commercial applications of unclassified material.

The majority of DARPA-funded projects result in such "dual-use" technologies, which may be important in both defense and civilian applications. The computer mouse, for example, came out of DARPA research in the 1960s to help the Army move its paperwork faster. Says a top scientist at the agency: "Almost everything we do is multi-use. Defense goals increasingly are just a leading indicator of what the rest of the country will need."

More recently, DARPA successfully dove into the internationally competitive field of microchip fabrication. In 1987, the agency inaugurated its Very High Speed Integrated Circuits program (VHSIC). A subsequent spin-off has enabled DARPA and DOD to finance development of high-resolution X-ray lithography systems needed to produce the next generation of computer memory chips.

The government initiative has given a boost to Hampshire Instruments Inc. of Rochester, New York, a maker of X-ray lithography equipment designed for high-volume microchip production. Called Series 3500, Hampshire's system was developed in part under a \$3.26 million contract from DARPA, which was administered by the Naval Research Laboratory.

James Forsyth, Hampshire's vice president of technology, applauds the agency's support.



Without it, he says, "cost-effective manufacturing technologies would not have been available to produce the latest generation of chips in a timely way."

DARPA has had its share of flops. After spending \$200 million, it closed the books in 1988 on an experimental combination helicopter-airplane called the X-Wing. Another project that fell short: a scheme to use artificial intelligence to guide a combat vehicle over rough terrain.

PICKING WINNERS AND LOSERS

Because it funds individual companies, DARPA has often trod — and sometimes crossed — the fine line between subsidizing new technologies and picking winners and losers in the commercial sector. Some firms complain of unfair treatment. For instance, since 1983 the agency has plowed more than \$200 million into massively parallel computing, a promising technology in which thousands of microprocessors work together to solve a problem. Among the main beneficiaries are Thinking Machines Corp. and Intel Scientific Computers; DARPA provided universities with subsidies to purchase 20 to 30 machines from each company.

Not surprisingly, nCUBE Corp., a supercomputer developer based in Foster City, California, objects. Michael Meirer, the firm's president, says this policy resulted in DARPA-funded machines gaining as much as 50% market share by last year. "I'm not saying it was malicious. It's just that the companies that were not promoted in that way had a really difficult time getting their feet on the ground." But things are looking up for Meirer. His company currently has several proposals before DARPA, including one for a "very large" hardware procurement.

The agency's flirtation with private-sector development has also drawn heat inside the Beltway. Last year, then DARPA director Craig Fields invested \$4 million of the agency's money in Gazelle Microcircuits Inc., a super-high-speed microchip developer based in Silicon Valley. In exchange, the government received a share of the profits and a seat on the board. The arrangement was the first under legislation, championed by Fields, that allowed DARPA to share in a company's future profits like a venture capitalist.

To the Administration, however, the deal amounted to forbidden industrial policy. The White House demoted Fields and shifted some of DARPA's budget to defense projects. Under his successors, Victor Reis and now Gary Denman, the agency has slowed participation in Sematech, a Texas consortium that helps American companies compete with Japanese makers of computer chips. It is also less active in television research. "In areas where there's a defense need, the Administration doesn't mind supporting technologies," says DARPA booster David W. Cheney, a senior associate at the Council on Competitiveness. But, he adds, "there's something of an ideological barrier" to government funding outside that scope.

MITI'S MODEL

Nevertheless, national support builds for Washington to either expand DARPA's mandate or create a civilian version of the agency. Some question the very concept of dual-use, claiming

that it may have worked during the cold war but it is an anachronism today. "We cannot afford to keep these two sectors at odds in this era of global competition," says George Heilmeier, a former director of DARPA who is now CEO of Bellcore Inc. in Livingston, New Jersey.

Many contend that the federal government's response for the 1990s should take a page from Japan's postwar industrial development, which has placed a high priority on supporting technologies needed for economic growth. Overall, the Japanese government accounts for about 20% of the country's R&D, which is one of the lowest percentages among industrialized nations. But as a percentage of GNP, Japan's non-defense R&D spending through the 1980s totaled 3.1% — almost 50% higher than U.S. outlays.

No single bureaucracy dominates Tokyo's technology purse strings. This year, the Ministry of Education will administer almost 47% of the government's \$17.1 billion R&D budget, most of it for basic research at public universities. MITI's portion? A surprisingly low 12%, or \$2.1 billion.

But the ministry's watchful regulatory eye and strategic aid to

Japanese industry have been invaluable. "We try to help with projects that private companies, or even several companies as a group, can't pursue because of budgetary difficulties or risks," says Takashi Hatakeyama of MITI's Agency of Industrial Science and Technology, the influential bureau that promotes advanced research through private-sector cooperatives.

Since 1966, AIST has kept a high profile with its successful National Research and Development Program (also known as the Large-Scale Project), which has funded 29 R&D initiatives. A notable success: the Super-High-Performance Electronic Computer Project, which helped Fujitsu Ltd. and NEC Corp. develop their first mainframe computers.

Contrary to American perceptions, MITI does not conduct projects for immediate commercial applications. According to NEC's senior adviser Michiyuki Uenohara, its goal is to develop basic or generic technologies. "Whether or not the companies can make marketable products out

of the projects depends on how much effort the firms put into it after the project is over," he says. MITI-sponsored programs spur domestic rivalries, prompting participating companies to match or exceed government funding for new technologies.

While DARPA helps (and expects) private ventures to bring products to market, MITI forces state-supported firms to come up with their own commercial strategies. "U.S. projects may be too easy on the participating companies," comments Uenohara.

Most MITI-organized cooperatives produce results within five years after a project's completion. The jury is still out on the AIST's trumpeted Fifth Generation Project, a 10-year plan begun in 1982. The initiative has not yet created parallel-processing technologies and computers capable of artificial intelligence. But, counters Hiroaki Uji of MITI's Electronics Policy Division, it has spawned a computer research center and trained thousands of engineers.

Meanwhile, Japan has moved on to the Real World Computing

COMMERCIAL
POTENTIAL HAS
REPLACED
MILITARY
IMPERATIVE AS
THE DRIVER OF
ADVANCED
ELECTRONICS

AGENCIES OF INFLUENCE

The U.S. Defense Advanced Research Projects Agency (DARPA) and Japan's Agency of Industrial Science and Technology (AIST) explore and develop strategic technologies — "defense-related" in America's case and "economically significant" in Japan's

THE UNITED STATES		JAPAN
DARPA (founded 1958)	AGENCY	AIST (founded 1952)
Department of Defense	PARENT	Ministry of International Trade and Industry (MITI)
Funding high-risk military technologies	PURPOSE	Promoting industrial technologies and national competitiveness
\$1.4 billion, about 2% of total government R&D spending	1991 BUDGET	\$938.4 million, about 5.5% of total government R&D spending
Packet-switched telecommunications, computer teaching aids, computer mouse, massively parallel processors	COMMERCIAL SUCCESSES	Super-high-performance mainframe computers, sea water desalination and by-product recovery
A \$200 million investment in the X-Wing, an experimental helicopter-airplane hybrid that was terminated in 1988	NOTABLE FAILURES	The Japan Software Co., disbanded in 1972 after failing to produce a common computer-programming language
High-definition TV, superconductivity, industry consortia and X-ray lithography	CURRENT PROJECTS	Micromachines, data-base systems, hypersonic transport, robotics and new energy technologies
Department of Commerce, NASA, National Science Foundation, National Institutes of Health and defense agencies	OTHER TECHNOLOGY AGENCIES	Ministry of Posts and Telecommunications, Ministry of Education, Science and Technology Agency and other MITI units

Project. A public-private effort that models computers after the human brain, the venture represents the next round of large-scale computer research.

FORGING A CONSENSUS

Most turf-conscious policymakers in Washington concede that any attempt to create a MITI-inspired bureaucracy in the United States may be doomed to failure. That should not be the aim, says William Graham, chairman and CEO of Xsirius Inc., a Virginia advanced-technology company. Instead, the federal government ought to "centralize the policy-making but decentralize implementation throughout all the mission agencies."

Several plans are already in the works to coordinate federal technology policies. Congressional Democrats have introduced four competitiveness bills that would establish an industrial agenda to be directed by the White House Office of Science and Technology Policy. Promoted by Senator Al Gore of Tennessee, one of the initiatives calls for \$105 million in 1993 to fund new R&D and manufacturing programs.

Last September, the Carnegie Commission on Science, Technology and Government went a step further, urging Congress to turn DARPA into NARPA, or the National Advanced Research Projects Administration. NARPA would coordinate advanced technologies on behalf of civilian government agencies such as the Department of Energy in the same manner that DARPA promotes them for DOD.

A handful of critics worry about expanding the role of the Pentagon's high-tech unit. "If DARPA grows, it will lose its ability to move quickly," says a former official at the agency's Information Science and Technology Office. Adds former DARPA director Heilmeier: "If DARPA assumes a coordination function, it would have a much harder time than MITI, which



does it without much legislative interference."

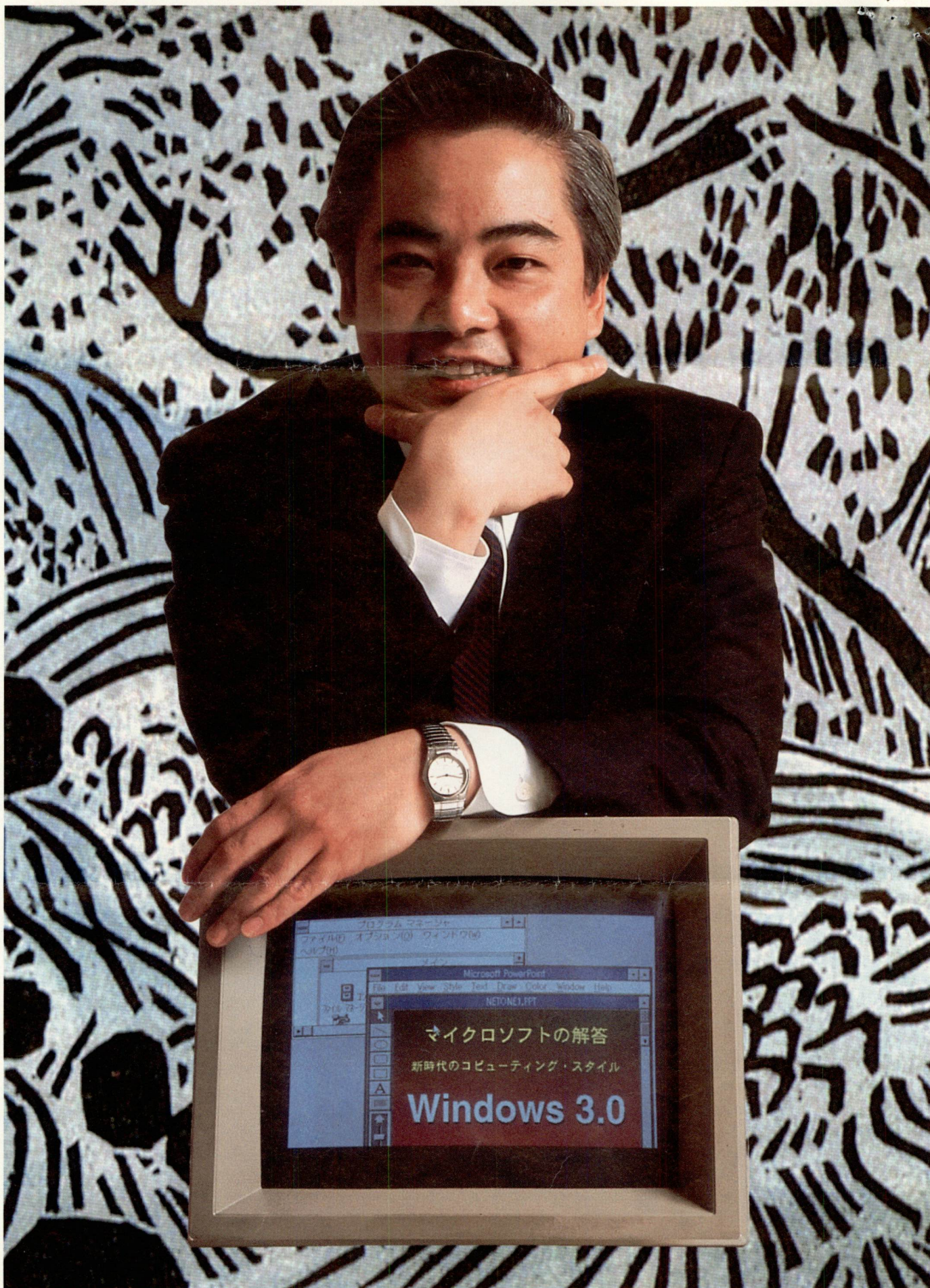
Although President Bush has opposed a larger role for DARPA and direct aid for specific companies or industries, the Administration might be having a change of heart. White House science adviser D. Allan Bromley has called for Japan-style government funding of "precompetitive, generic, critical, enabling technologies with high commercial potential."

As a sign of support, the President's civilian R&D budget for fiscal 1993 shows a 7% increase, to over \$30 billion; defense R&D would rise just 1%. The shift may be just in time: total research spending in the United States began to fall in the late 1980s — the first time since the early 1970s, according to the National Science Board.

DARPA may not be the only beneficiary of this new-found technological commitment. The Commerce Department's nascent Technology Administration has stepped up attempts to commercialize research performed in federal laboratories, and has eased patent and licensing policies. Commerce officials also tout their tiny Advanced Technology Program, which provides seed money for ground-breaking scientific applications. "The government now has a technology department," beams Robert M. White, Commerce Under Secretary for Technology and director of the \$50 million program.

No matter which federal agency comes out on top, America will probably never adopt a full-blown technology policy like Japan's. But, by adapting to the new international realities and electoral pressures, the U.S. government may finally make commercial competitiveness a national priority. ●

Additional research by Tomoko Hosoe in Tokyo



"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201655

ORIGINATOR: 02

SPEECH: YES NO

FROM: ROSS, Eric: UNIVERSITY OF ROCHESTER

DATE OF EVENT: 10/02/92 THRU: 10/04/92
TENTATIVE DATES:

LOCATION OF EVENT: UNIVERSITY OF ROCHESTER

TIME OF EVENT:

SUBJECT: AN INVITATION TO SPEAK AT AN ENVIRONMENTAL SCIENCE
CONFERENCE FOR STUDENTS.

RSVP: 05/20/92

CONTACT PERSON:

CONTACT NUMBER:

INVITATION ACCEPTED?

~~YES~~

NO

COPIES TO: ENVIRONMENT

REMARKS:

DATE OF LETTER: 05/06/92

DATE RECEIVED: 05/06/92

FILE: P-INVITATION-SPEECH



1655

UNIVERSITY OF ROCHESTER RECEIVED

ROCHESTER, NEW YORK 14627

Department of Geological Sciences

92 MAY 6 P 5: 13

Eric Ross, Student Coordinator
Student Environmental Science Conference
Department of Geology
University of Rochester
Rochester, NY 14627

1 May 1992

D. Allen Bromley
Assistant to the President for Science and Technology
Suite 358
Old Executive Office Building
Washington, D.C. 20500

Dr. Bromley:

During the weekend of October 2, 3, and 4, 1992, I will coordinate an Environmental Science Conference for students to be held at the University of Rochester. I wish to extend to you an invitation to speak at this conference.

The Student Environmental Science Conference (SESC) will be an opportunity for students interested in environmental science to hear basic scientific data from the scientists behind the figures. As an intensive two-day lecture series, SESC has the potential to solidify students' interest in and knowledge of the environment. As a freshman in college, I was strongly influenced by a detailed lecture series on chlorofluorocarbons and ozone depletion by F. Sherwood Rowland at the University of Rochester--I am now a chemistry major with a strong interest in the study of environmental science. With a forum like SESC, students can see that the study of the environment can provide clear answers, as well as being a fascinating subject to study. A gathering of this sort would create a rare opportunity for students to experience the forefront of environmental science research.

SESC will feature speakers who are prominent research scientists. We hope that they will be an inspiration to the students, faculty, and professionals attending the conference.

F. Sherwood Rowland (U Cal Irvine), Wallace S. Broecker (Columbia), John W. Bartlett (DOE), Barber Conable, Jr. (World Bank), Eugene Rasmusson (U Maryland), and

Richard April (Colgate) have accepted our invitations to speak at SESC. Professor Rowland wishes to bring this conference to national attention.

The conference will be divided into three concept series: Atmosphere, Biosphere, and Society. These series will run parallel throughout the entire seven lecture time slots. Attendees will have the opportunity to attend more than one series; the series are simply a convenient way to group lectures and lecturers for educational purposes. The series will also allow students interested in a single field of study to experience a concept in depth. For example, a student in a Biology program may follow the Biosphere series to completion and more fully understand both the ideas presented in the lectures and the invested interest of the lecturers. Several of the more popular lectures will be scheduled with no conflicts as to allow more students to experience the main points of the conference.

The series will be divided as follows:

Atmosphere

- 1 Stratospheric Ozone Depletion
- 2 Atmospheric Methane and the Slowing of the
Earth's Oxidation Process
- 3 Global Warming Systems
- 4 The Greenhouse Effect
- 5 Acid Rain

Biosphere

- 1 Biodiversity and Effects of Altered Evolution Processes
- 2 Effects of Deforestation
- 3 El Nino Southern Oscillation: a Study in Biological
Response to Rapid Climate Change
- 4 The Gaia Hypothesis
- 5 Effects of Overpopulation

Society

- 1 Economics and the Environment in Developing Nations
- 2 Nuclear Energy: Technology and Safety
- 3 Radioactive Waste Disposal
- 4 Solar Energy Theory and Technology
- 5 The Effects of Environmental Carcinogens

Thus far, we have contacted the chairs of all chemistry, biology, geology, and environmental science departments, as well as specific professors, at the ten colleges and

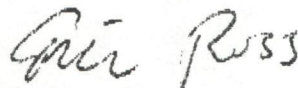
universities within a thirty minute radius of the University of Rochester. Preliminary indications from our contacts suggest that between five and six-hundred students from these tent institutions will attend. We expect that as speakers and topics are finalized, and schools within three-hour radius (Cornell, Syracuse, SUNY Buffalo, Buffalo State, SUNY Binghamton, University of Toronto) are contacted, the projected attendance will increase considerably.

The Department of Geology, the official environmental science department, is the host organization within the University. The Department is very excited with the prospect of having SESC and is providing advise, contacts with potential speakers, and funds.

If you have additional questions about SESC, please feel free to write or call me. You can reach me at home all year at (716) 464-8203, in the Bambara Lab at (716) 275-2764, or at the Department of Geology at (716) 275-5713. The Department of Geology's fax number is (716) 244-5689.

I do hope that you are interested in participating in the Student Environmental Science Conference 1992. I look forward to hearing from you.

Sincerely,

A handwritten signature in cursive script that reads "Eric Ross".

Eric Ross.

THE WHITE HOUSE
WASHINGTON

June 2, 1992

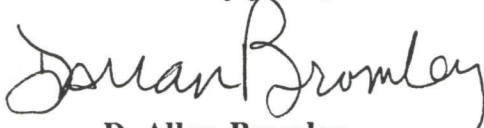
Dear Dr. Ross:

Thank you for your kind letter inviting me to address your Environmental Science Conference scheduled to be held on October 2, 3, and 4, 1992 at the University of Rochester. I apologize for the much belated response.

Because my schedule has become increasingly consumed with election year activities as well as my regular duties, I must regretfully decline.

Thank you for thinking of me. With best wishes,

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley". The signature is fluid and cursive, with the first name "D. Allan" and the last name "Bromley" clearly distinguishable.

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

Dr. Eric Ross
Department of Geological Sciences
University of Rochester
Rochester, New York 14627

"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201617

ORIGINATOR: 02

SPEECH: YES NO

FROM: STRUGER, Odo J.: ALLEN-BRADLEY

DATE OF EVENT: 09/10/92

THRU:

TENTATIVE DATES:

LOCATION OF EVENT: MILWAUKEE, WISCONSIN

TIME OF EVENT:

SUBJECT: AN INVITATION TO SPEAK AT THE THEIR 1992 ANNUAL
INNOVATION AWARDS DINNER.

RSVP: 05/14/92

CONTACT PERSON:

CONTACT NUMBER: 216-646-3005

INVITATION ACCEPTED?

~~YES~~

NO

COPIES TO: INDUSTRIAL

REMARKS:

DATE OF LETTER: 04/30/92

DATE RECEIVED: 05/06/92

FILE: P-INVITATION-SPEECH





ALLEN-BRADLEY
A ROCKWELL INTERNATIONAL COMPANY

**INDUSTRIAL COMPUTER AND
COMMUNICATION GROUP**

747 Alpha Drive
Highland Heights, OH 44143-2195 USA
Telephone 216/646-5000
FAX: 216/646-3075
TELEX: 241146

RECEIVED

92 MAY 6 9:38

April 30, 1992

OSTP
MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President for Science and Technology
Old Executive Office Building
17th Street and Pennsylvania Ave., NW, Room 358
Washington, DC 20506

Dear Dr. Bromley:

Please accept this letter as an **invitation to speak at Allen-Bradley's 1992 Annual Innovation Awards Dinner**, September 10th at the Allen-Bradley Headquarters, Milwaukee, Wisconsin. Attached, please find the tentative agenda for this event. The audience will be Senior Executives of our parent company, Rockwell International and Allen-Bradley and Engineers/technical personnel comprising an audience of approximately 120-140.

This Awards Dinner is non-commercial. The purpose of this event is to honor those Engineers and technical personnel recognized for achievements in patents and proprietary innovations and significant contributions to achieving manufacturing excellence.

We would be extremely honored if you could attend and share your thoughts on the importance of science and technology, teamwork and achieving manufacturing excellence in the United States and abroad.

If for some reason you are unable to attend, I would appreciate a reply at your earliest convenience. I may be reached at (216) 646-3005.

Sincerely,

ALLEN-BRADLEY CO.

Odo J. Struger, Ph.D.
Vice President
Technology Development

/drk

Encl. Tentative Agenda for 1992 Annual Innovation Awards Dinner

**TENTATIVE AGENDA FOR 1992 ANNUAL
INNOVATION AWARDS DINNER**

Thursday, September 10th, 1992

Allen-Bradley Company Headquarters
Milwaukee, Wisconsin

AGENDA

5:15 to 6:15PM Cocktails & Hors d'Oeuvres in Guest Dining Room

6:15 to 7:45PM Dinner

7:45 to 9:30PM Program

THE WHITE HOUSE
WASHINGTON

May 8, 1992

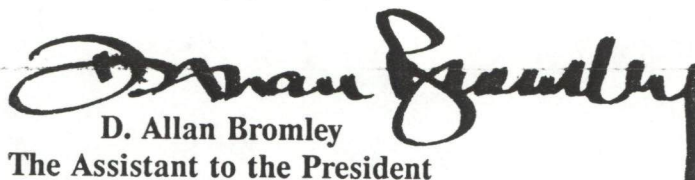
Dear Dr. Struger:

Thank you for your letter of April 30 inviting me to address the Allen-Bradley's 1992 Annual Innovation Awards Dinner scheduled for September 10, 1992 in Milwaukee.

As much as I would like to join you, I have a long-standing commitment on that date so I must regretfully decline your invitation.

I appreciate your thinking of me and would like to offer my best wishes for a successful evening.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley". The signature is fluid and cursive, with the first name "D." being small and the last name "Bromley" being larger and more prominent.

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

Dr. Odo J. Stuger
Vice President
Technology Development
Allen-Bradley
747 Alpha Drive
Highland Heights, Ohio 44143

"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201054

ORIGINATOR: 02

SPEECH: YES NO

FROM: BLANDING, Katie E.: DEPARTMENT OF THE ARMY

DATE OF EVENT: 07/23/92

THRU: 07/24/92
TENTATIVE DATES:

LOCATION OF EVENT: REDSTONE ARSENAL, ALABAMA

TIME OF EVENT:

SUBJECT: AN INVITATION TO BE THE KEYNOTE SPEAKER AT THEIR
INTERAGENCY CONFERENCE ON SCIENCE, MATHEMATICS AND
ENGINEERING EDUCATION.

RSVP: 04/14/92

CONTACT PERSON:

CONTACT NUMBER: 202-876-9296

INVITATION ACCEPTED?

~~YES~~

NO

COPIES TO: INTERNATIONAL/POL

REMARKS: 4/6/92 - Regretted to Janet Martin
mn

DATE OF LETTER: 04/24/92

DATE RECEIVED: 03/31/92

FILE: P-INVITATION-SPEECH





DEPARTMENT OF THE ARMY
UNITED STATES ARMY MISSILE COMMAND
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

March 24, 1992

Weapons Sciences Directorate

1054 IN
RECEIVED

92 MAR 31 P 1: 12

MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President for
Science and Technology
Old Executive Office Building
17th Street and Pennsylvania Avenue, NW
Washington, D.C. 20506

Dear Mr. Bromley:

The U.S. Army Missile Command, Redstone Arsenal, Alabama in coordination with the U.S. Army Research Office, Research Triangle Park, North Carolina is sponsoring an interagency conference on Science, Mathematics, and Engineering Education on 23-24 July 1992, in Huntsville, Alabama. The theme for the conference is "Educating a Workforce for the DOD Mission."

We would appreciate your participation as a keynote speaker representing the concerns of your agency in the area of science, mathematics, and engineering.

Since this is a meeting where program information may be shared among agencies, we ask that you or a designee provide information on programs in science, mathematics, and engineering, and any efforts within your organization that might be useful to other agencies in planning and implementing their programs.

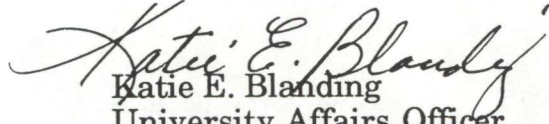
Should you agree, an official invitation will come to you from MG William Chen, Commander, U.S. Army Missile Command, Redstone Arsenal.

We sincerely hope that you will be able to attend this important meeting.

Should you need additional information please call me at 205-876-9296 or DSN 746-9296.

Thank you for your support.

Sincerely,


Katie E. Blanding
University Affairs Officer
Weapons Sciences Directorate
Research, Development, and
Engineering Center



1054 1W

DEPARTMENT OF THE ARMY
UNITED STATES ARMY MISSILE COMMAND
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

March 24, 1992

Weapons Sciences Directorate

RECEIVED

92 MAR 31 P 1:12

OSTP
MAIL ROOM

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Assistant to the President for
Science and Technology
Old Executive Office Building
17th Street and Pennsylvania Avenue, NW
Washington, D.C. 20506

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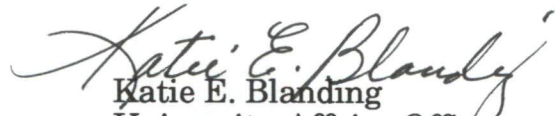
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Thank you for your support.

Sincerely,


Katie E. Blanding
University Affairs Officer
Weapons Sciences Directorate
Research, Development, and
Engineering Center

"Document Control"

TYPE: ACTION

ORIGINATOR: 02

DOCUMENT NUMBER: 9201531

STATUS I

DIRECTORATE STATUS

FROM: REDDING, Roger: UNIVERSITY OF NORTH TEXAS

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/22/92

SUBJECT: HE IS REQUESTING A COPY OF THE SPEECH DR. BROMLEY
DELIVERED AT THE AAAS COLLOQUIUM ON SCIENCE AND
TECHNOLOGY POLICY.

DIRECTORATE

ASSIGNED: Steve Olson

STAFF

ASSIGNED:

ACTION

REQUIRED: DIRECT REPLY

STAFF

ACTION: *Shirley Olson*

SENDER'S DUE DATE:

OSTP DUE DATE: 05/13/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

5/8/92

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

O/Sm

EXT: *2734*

REMARKS:

Copy of speech sent on 5/8/92.

Shirley Olson

OSTP RECEIVED: 04/30/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

CENTRAL FILES:





University of North Texas

College of Arts and Sciences
Office of the Dean

153
RECEIVED

92 APR 30 PM 2:33

OSTP
MAIL ROOM

April 22, 1992

Dr. D. Allen Bromley
White House Office of Science and Technology
Old Executive Office Bldg.
17th & Pennsylvania Ave., NW
Washington, DC 20500

Dear Dr. Bromley:

It was my pleasure to hear your talk last week in Washington at the AAAS Colloquium on Science and Technology Policy. I want to commend you on an excellent presentation. If copies of the written version are or soon will be available, I would greatly appreciate your sending me one.

Thanks in advance.

Sincerely,

A handwritten signature in cursive script, appearing to read "Rogers Redding".

Rogers Redding
Professor of Physics
Associate Dean for Science and Technology

/dc

"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201475

ORIGINATOR: 02

SPEECH: YES NO

FROM: STONE, Edward C.: JET PROPULSION LAB

DATE OF EVENT: 06/19/92 THRU:
TENTATIVE DATES:

LOCATION OF EVENT: J.W. MARRIOTT

TIME OF EVENT:

SUBJECT: AN INVITATION TO ADDRESS THE CALTECH TRUSTEES'
COMMITTEE AT THEIR ANNUAL MEETING.

RSVP: 05/11/92

CONTACT PERSON:

CONTACT NUMBER: 818-354-3405

INVITATION ACCEPTED? YES NO

COPIES TO: PHYSICAL SCIENCES

REMARKS: 4/29/92 Regretted to Helen Benedict.
mn

DATE OF LETTER: 04/20/92

DATE RECEIVED: 04/27/92

FILE: P-INVITATION-SPEECH



1475

JET PROPULSION LABORATORY
PASADENA, CALIFORNIA

OFFICE OF THE DIRECTOR

April 20, 1992 11:22

MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President for
Science and Technology
Old Executive Office Building
17th Street, NW
Washington, DC 20506

Dear Allan:

The Caltech Trustees' Committee on JPL meets annually on the East Coast to review JPL activities and discuss matters of interest to Caltech with officials of the government.

This year the meeting has been set for Friday, June 19, at the J. W. Marriott Hotel on Pennsylvania Avenue. Topics that we expect to cover include policies shaping the direction of the U.S. Civil Space Program, issues dealing with federally-funded laboratories, priorities being established in NASA's long-range strategic planning process, and the direction the Board should encourage for Caltech and JPL.

These issues are of continuing interest to the Trustees, and I believe this year will be no exception, as the nation is about to embark on major international space projects that will affect NASA for years to come.

The Committee Chairman, Dr. Gordon E. Moore, and I would be particularly pleased if you could join us and provide the Committee with your views on policy issues pertaining to the future space program. You would be welcome to join us for lunch if your schedule allows this.

1475

JET PROPULSION LABORATORY
PASADENA, CALIFORNIA

OFFICE OF THE DIRECTOR

April 20, 1992
RECEIVED
APR 22 11:22
OSTP
MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President for
Science and Technology
Old Executive Office Building
17th Street, NW
Washington, DC 20506

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The Committee Chairman, Dr. Gordon E. Moore, and I would be particularly pleased if you could join us and provide the Committee with your views on policy issues pertaining to the future space program. You would be welcome to join us for lunch if your schedule allows this.

Dr. D. Allan Bromley -2-

April 20, 1992

We have enclosed a list of the Committee members for your information. I have also asked Vice President Dan Quayle to join us and participate in the program.

Please contact my office and let me know your plans (818) 354-3405. Gordon and I look forward to seeing you in June.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ed Stone".

Edward C. Stone

Enclosure

CALTECH TRUSTEES' COMMITTEE ON JPL

Mr. Robert Anderson
Mr. R. Stanton Avery
Dr. Harold Brown
Mr. Walter Burke
Dr. Lee A. DuBridge
Dr. Thomas E. Everhart
Mr. Charles C. Gates
Mr. James W. Glanville
The Hon. Shirley M. Hufstedler
ADM Bobby R. Inman
Mr. Eli S. Jacobs
Dr. Ralph Landau
Dr. Yuan T. Lee
Dr. Ruben F. Mettler
Dr. Gordon E. Moore
Mrs. Pamela Pesenti
Mr. Stanley R. Rawn
Mrs. Mary L. Scranton
Mr. Frank G. Wells
Dr. Albert D. Wheelon

ADVISORY MEMBERS

Mr. Thomas W. Anderson
Dr. Paul Jennings
Mr. David Morrisroe
Dr. Edward C. Stone
Mr. Harry M. Yohalem
Mrs. Mary Webster, Secretary

"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201434

ORIGINATOR: 02

SPEECH: YES NO

FROM: BERNTHAL, Frederick M.: NATIONAL SCIENCE
FOUNDATION

DATE OF EVENT: 04/27/92 THRU:
TENTATIVE DATES:

LOCATION OF EVENT:

TIME OF EVENT:

SUBJECT: AN INVITATION TO DR. BROMLEY TO ATTEND A RECEPTION
BEING HELD FOR THE PARTICIPANTS OF THIS YEAR'S
SUMMER INSTITUTES IN JAPAN.

RSVP: 04/24/92

CONTACT PERSON:

CONTACT NUMBER:

INVITATION ACCEPTED? YES NO

COPIES TO: INTERNATIONAL/POL

REMARKS:

DATE OF LETTER: 04/15/92

DATE RECEIVED: 04/20/92

FILE: P-INVITATION-SPEECH

1434

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550



OFFICE OF THE
DEPUTY DIRECTOR

April 15, 1992

RECEIVED

92 APR 20 P 2: 14

OSTP
MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
Old Executive Office Building
Washington, D. C. 20506

Dear Dr. Allan Bromley:

Your participation has been a highlight of the orientation activities of the past two Summer Institutes in Japan. This year we plan to hold a reception for the participants and invited guests on the evening of Monday, April 27, 1992. We would be honored if you would consent to attend and to address the students. This would certainly impress on all the value and importance of this extraordinary program in our scientific relations with Japan.

This year we have selected fifty-eight students to participate in the Summer Institute in Japan Program. In cooperation with the National Institutes of Health, we selected and will support eight of the students in the biomedical sciences. In addition, the total number of private sector host institutions has increased to eighteen and the location of the Summer Institute has expanded to include host institutions in Tokyo as well as in Tsukuba. The enclosed background material will explain more.

I hope you can join us.

Sincerely,

Frederick M. Bernthal
Deputy Director

Enclosure

Summer Institute in Japan for U.S. Graduate Students in Science and Engineering

The Summer Institute provides U.S. science and engineering graduate students first-hand experience in a Japanese research environment, intensive Japanese language training, and an introduction to the science and science-policy infrastructure of Japan. The goals of the Institute are to introduce U.S. graduate students to Japanese science and engineering research laboratories and to initiate personal relationships which will better enable students to collaborate with Japanese counterparts in the future.

The Summer Institute evolved from discussions of the Task Force on Access of the 1988 U.S.-Japan Agreement on Cooperation in Research and Development in Science and Technology. The U.S. National Science Foundation (NSF) and the Science and Technology Agency of Japan (STA) serve as the implementing agencies of the Summer Institute.

In its first year, 1990, the Summer Institute supported 25 U.S. graduate students to travel to Tsukuba Science City and partake in 2-month internships at 13 different Japanese government research laboratories. The students spent each morning receiving intensive Japanese language instruction and each afternoon conducting research under the supervision of a host Japanese scientist. The students and hosts considered the Summer Institute a success in starting new collaborative research relationships between U.S. and Japanese scientists and the STA and NSF decided to continue the program.

In 1991, STA and NSF agreed to modify the Summer Institute in three major ways. First, the number of participants was doubled from 25 to 49. Second, the Center for Global Partnership financially supported the Japanese-side costs for the program. Third, 7 private corporate laboratories participated as host institutions. In total, the 49 students experienced the Japanese methods of research at 27 different Japanese institutions in Tsukuba Science City.

For the 1992 Summer Institute, NIH has agreed to support up to 10 graduate students in the medical or clinical fields of science; these 10 students would be in addition to the 50 students to be selected by NSF. The STA was also successful in increasing the number of participating corporate laboratories to 18 (see attachment #1). The 1992 Summer Institute will also include a select few government laboratories in Tokyo as host institutions (see attachment #2).

Attachment #1
List of 18 Japanese Companies to Participate
in the 1992 Summer Institute

1. **Chodai Company, Ltd.** Established in 1978 as a designing and engineering consulting firm specializing in long-span suspension bridges, Chodai has contributed much to the development of such large-scale bridges as the ones connecting Honshu and Shikoku islands and many others, not only in Japan but also in Southeast Asia.

* Potential research themes and host research groups:

Labs in "Large-scale Bridge Department" involved in planning and designing large-scale bridges (such as long-span suspension bridges), structural analysis, and R&D on anti-earthquake and wind-resistant bridge structures (numerical simulation and experimental analysis).

2. **Daikin Industries Ltd.** A major manufacturer of air conditioners for commercial use. Diversified into hydraulic equipment and fluorine chemicals. Pioneer in fluorine gas and fluoroplastics for semiconductor manufacturers. Fostering industrial robots, CAD/CAM systems, and display units.

* Potential research themes and host research groups:

For students majoring in mechanical engineering:

- * Research related to cryogenic systems

For students majoring in electronics:

- * Research related to superconducting materials

3. **Eisai Company Ltd.** A leading pharmaceutical producer specializing in ethical drugs. Cardiovascular drugs are mainline but the company has advanced into anti-inflammatory analgesics and antibiotics.

* Potential research themes and host research groups:

Pharmaceutical studies, including synthesis, pharmacology, biochemistry, metabolism, biotechnology, and drug preparations.

4. **Fujisawa Pharmaceutical Co. Ltd.** One of the

leading pharmaceutical makers with top stress on antibiotics. Affiliated with the Sanwa Bank group. Leader in "cephalosporin revolution" in antibiotics in Japan; launched first cephalosporin antibiotic in 1971. Currently building up operation setup specializing in pharmaceuticals.

* Potential research themes and host research groups:

- 1) Exploratory Research Laboratory:

- * Synthesis group: natural products chemistry
- * Bio-science group: pharmacological evaluation
- * Enzyme group: Immunology and/or cancer biology

- 2) Basic Research Group: Clarification of causative factors of the following diseases by means of pharmacological and biochemical analysis in order to develop novel drug screening systems:

- * Diabetes mellitus and diabetic complications
- * Stress-induced diseases (affecting central and peripheral nervous systems)

5. **Hamamatsu Photonics K.K.** A leading R&D and manufacturing company specializing in light-sensitive devices and their applied instruments, ranging from photoelectric tubes and photomultiplier tubes to a wide variety of light sensors, photodiodes, CdS cells, and other semiconductor devices. Now expanding into such new fields as optical information processing in the life sciences.

* Potential research themes and host research groups:

"Photonic" (optoelectronic) studies on bio-dynamics.

6. **Harima Chemicals, Inc.** A pioneer in application of resin and fatty acids. Mainly engaged in the production of resins for paints, chemicals for paper-making, and industrial oil.

* Potential research themes and host research groups:

- (1) Biotechnology Lab: Cultivation of *Euglena gracilis*
- (2) Organosynthetic Lab:
 - a. Preparation of fine metal powders from rosin metal salts
 - b. Selective separation of polyunsaturated fatty acids through Ag⁺-complex formation
- (3) Polymer Lab: Molecular design of dispersive polymers in water

7. **Hodogaya Chemical Co., Ltd.** One of Japan's leading manufacturers of a wide range of chemicals, including dyes, organic and inorganic industrial chemicals, agricultural chemicals, functional resins, and fine chemicals. Enjoys superior position in information-related pigments used in facsimiles.

* Potential research themes and host research groups:

Studies on microbial natural enemies of plant-parasitic nematodes in soil, in order to develop biological pesticides for agricultural use.

8. **Kumagai Gumi Co., Ltd.** One of largest construction contractors, with strong performance overseas. Particularly active in dam, tunnel, and other large-scale civil engineering, but also well-established in general construction. Leads rivals in overseas markets, particularly in advanced countries, including the United States and Australia.

* Potential host research groups:

Civil works structure lab, building structure lab, soil foundation lab, marine hydraulics lab, equipment lab, and environment R&D lab.

9. **Mitsubishi Petrochemical Co., Ltd.** The largest petrochemical enterprise in Japan, jointly established by the Mitsubishi and Shell groups. It has petrochemical complex centers at Kashima and Yokkaichi. Main products are polyethylene, polypropylene, ethylene glycol, and styrene monomer from mainlines. Now diversifying into high-function products and pharmaceuticals.

* Potential research themes and host research

groups:

- 1) Biochemicals Group:

* Studies on microorganisms to analyze genetic regulatory mechanisms

- 2) Materials Characterization & Analysis Lab.:

* Isolation of metabolites from natural products and their structural analysis

* Surface structural analysis of new materials

10. **NEC Corporation** One of Japan's representative high-tech enterprises. Globally known for the "NEC" brand. Involved in the "C&C Strategy," designed to integrate communications and computers by taking advantage of the world's largest production of semiconductors.

* Potential research themes and host research groups:

Fundamental Research Laboratories: for R&D on new semiconductor devices and film deposition technology

11. **Okumura Corporation** A general construction company ranking next to the Big Ten in scale. Specializes in railroad and highway construction. Active in the development of new construction methods and systems, especially systems for active control of structural vibration caused by earthquakes.

* Potential research themes and host research groups:

R&D on aseismic active vibration control systems for structures.

12. **Optoelectronics Technology Research Corporation (OTRC).** An R&D consortium established in 1986 as a joint project of the Japan Key Technology Center and 13 member companies to promote R&D in optoelectronic integrated circuits (OEIC). Primary emphasis is placed on fundamental research to produce break-throughs in future OEICs, where 2- or 3-dimensional superlattice structures will be required.

* Potential research themes and host research groups:

Basic research on epitaxy and nm processes of III

- V semiconductors

13. **Sanyo Electric Co., Ltd.** Major consumer electronics maker, particularly strong in audio systems and refrigerators. Holds largest market share in solar cells.

* Potential research themes and host research groups:

- (1) Molecular Electronics Lab: Studies on memory and learning mechanisms of mollusca.
- (2) New Materials Lab: Development of superconducting films by molecular beam epitaxy (MBE)
- (3) Semiconductor Microstructural Processing Lab: X-ray lithography by SR system.

14. **Stanley Electric Co., Ltd.** A leading maker of electrical equipment for automobiles and leads for motorcycle lamps. Strengthening setup to develop electronic-related products, such as LEDs and LCs. Enjoys good performance in JV production in the United States. Strengthening U.S. plant (in Ohio).

* Potential research themes and host research groups:

R&D Group 900G, a group engaged in biotechnology and organic semiconductor materials R&D

15. **Sumitomo Chemical Co., Ltd.** One of Japan's largest comprehensive chemical manufacturers, offering a diverse range of products, including basic chemicals, fine chemicals, agricultural chemicals, pharmaceuticals, electronic materials, composite materials, and aluminum. Now placing emphasis on expansion of fine chemical products to 50% of total annual sales.

* Potential research themes and host research groups:

Optoelectronics Division:

- * Development of ferroelectric liquid crystals
- * Development of organic electro-luminescent materials

16. **Sumitomo Heavy Industries, Ltd.** Major shipbuilder belonging to the Sumitomo group. Diversified into steel making, cargo handling,

construction, injection molding, and other machine building--shipbuilding is no longer the company's main line. Ranks first in speed change and reduction gears.

* Potential research themes and host research groups:

Electron-beam Radiation Group: Electron beam radiation experiments (by use of a "Dynamitron" electron-beam accelerator) for application in the sterilization of medical devices, as well as radiation chemistry research into strengthening plastics and other materials.

17. **Tokuyama Soda Co., Ltd.** A major producer of caustic soda and chlorine, Tokuyama also produces cement and such synthetic resins as polypropylene. R&D emphasizes fine chemicals such as polysilicon, resin lenses, dental materials, and new ceramics. Advancing into electronic materials.

* Potential research themes and host research groups:

- (1) Organic synthesis
- (2) Analytical chemistry (organic microanalysis, including quantitative, qualitative, and structural analysis).

18. **Ulvac Japan, Ltd.** A leading manufacturer of vacuum equipment and systems for a wide range of industry-specific applications, including use in the semiconductor and electronics industries, as well as in the production of packaging and storage of numerous foods and medicines.

* Potential research themes and host research groups:

- (1) Vapor deposition polymerization of organic polymer films and their applications
- (2) Surface treatment of materials to be used in super- and ultra-high vacuum systems.

Attachment #2
List of Potential Host Institutions for
the 1992 Summer Institute in Japan

Fax number

Environment Agency

*National Institute for Environmental Studies (298) 51-4732

Ministry of Agriculture, Forestry, and Fisheries

*Forestry and Forest Products Research Institute (298) 74-3720

*Fruit Tree Research Station (298) 38-6437

*National Agriculture Research Center (298) 38-8484

*National Food Research Institute (298) 38-7996

*National Institute of Agrobiological Resources (NIAR) (298) 38-7408

*National Institute of Agro-Environmental Sciences (298) 38-8199

*National Institute of Animal Health (298) 38-7880

*National Institute of Animal Industry (298) 38-8606

*National Institute of Sericultural and
Entomological Science (298) 38-6028

National Research Institute of Agricultural Economics (3) 3940-0232

*National Research Institute of Agricultural Engineering (298) 38-7609

National Research Institute of Fisheries Science (3) 3533-5693

*Tropical Agriculture Research Center (298) 38-6316

Ministry of Construction

*Building Research Institute (298) 64-2989

*Geographical Survey Institute (298) 64-1658

*Public Works Research Institute (298) 64-2840

Ministry of Education, Science, and Culture

*National Laboratory of High-Energy Physics (KEK) (298) 54-3182

*Tsukuba Botanical Garden, National Science Museum (298) 51-6619

*University of Library and Information Science (298) 52-0511

*University of Tsukuba (298) 53-6019

Ministry of Finance

National Research Institute of Brewing (3) 3910-6239

Ministry of Health and Welfare

Institute of Population Problems (3) 3591-4816

Institute of Public Health (3) 3446-4314

National Cancer Center (3) 3545-3567

National Children's Medical Research Center (3) 3414-3208

National Institute of Health (3) 3446-6286

National Institute of Health and Nutrition (3) 3202-3278

National Institute of Health Services Management (3) 3202-6853

National Institute of Hygienic Sciences (3) 3707-6950

National Institute for Leprosy Research (423) 91-8211

National Institute for Neuroscience (423) 41-2711

*Tsukuba Medicinal Plant Research Station,
National Institute of Hygienic Sciences (3) 3707-6950

*Tsukuba Primate Center for Medical Science (2975) 5-0218

Ministry of Home Affairs

Fire Research Institute

(422) 44-7719

Ministry of International Trade and Industry (MITI)

Agency of Industrial Science and Technology (AIST)

*Electrotechnical Laboratory

(298) 55-1729

*Fermentation Research Institute

(298) 54-6005

*Geological Survey of Japan

(298) 54-3571

*Industrial Products Research Institute

(298) 54-6618

*Mechanical Engineering Laboratory

(298) 54-2513

*National Chemical Laboratory for Industry

(298) 54-1397

*National Institute for Resources and Environment (NIRE)

(298) 54-3049

*National Research Laboratory of Metrology

(298) 54-4135

*Research Institute for Polymers and Textiles

(298) 54-6233

Ministry of Labour

National Institute of Industrial Safety

(3) 3452-6565

Ministry of Posts and Telecommunications

Communications Research Laboratory

(423) 27-7458

Ministry of Transport

Electronic Navigation Research Institute

(422) 41-3165

Hydrographic Dept., Japan Maritime Safety Agency

(3) 3545-2885

Institute for Sea Training

(3) 3580-4492

*Meteorological Research Institute

(298) 51-1449

Ship Research Institute

(422) 41-3026

Traffic Safety and Nuisance Research Institute

(422) 41-3233

National Police Agency

National Research Institute of Police Science

(3) 3261-9986

Public Corporations

The Institute of Physical & Chemical Research (RIKEN)

(484) 62-1554

Japan Information Center of Science and Technology

(3) 3593-3375

*National Space Development Agency of Japan

(3) 3436-2928

NHK (Japan Broadcasting Corporation) Science and

Technical Research Laboratories

(3) 3417-5536

Research Development Corporation of Japan (JRDC)

(3) 3581-1486

*Tsukuba Life Science Center of the

Institute of Physical and Chemical Research (RIKEN)

(298) 36-2616

Science and Technology Agency

National Aerospace Laboratory

(422) 48-5888

*National Institute for Research in Inorganic Materials

(298) 52-7449

National Institute of Science and Technology Policy

(3) 3503-3996

*National Research Institute for Earth Science and

Disaster Prevention

(298) 51-1622

*National Research Institute for Metals

(3) 3792-3337

* Laboratories located in Tsukuba City

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9201377

ORIGINATOR: 02

STATUS A

DIRECTORATE STATUS

FROM: PARMELEE, Elizabeth W.: MIT

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/09/92

SUBJECT: SHE IS WRITING IN REGARD TO DR. BROMLEY'S LECTURE ON
04/22/92. THEY REQUEST TO KNOW DR. BROMLEY'S
AUDIO-VISUAL NEEDS, AND IF RECORDING THE SESSION IS
PERMISSABLE.

DIRECTORATE

STAFF

ASSIGNED: DIRECTOR'S OFFICE

ASSIGNED:

ACTION

REQUIRED: DIRECT REPLY

STAFF

ACTION:

Steve Olson

SENDER'S DUE DATE:

OSTP DUE DATE: 04/20/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

4/20/92

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

EXT: 2734

REMARKS:

Reply made by phone to MIT
on 4/20/92. Steve Olson



OSTP RECEIVED: 04/15/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

CENTRAL FILES:

Department of
Nuclear
Engineering

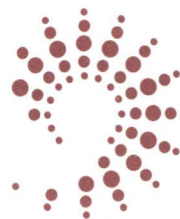
Cambridge
Massachusetts
02139

Massachusetts
Institute
of Technology

Room 24-102
(617)253-4206
Fax (617)258-7437

RECE

92 APR 15

OS
MAIL

Mujid S. Kazimi
Professor and
Department Head

April 9, 1992

Dr. D. Allan Bromley
Science Advisor to the President
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20506

via facsimile: 202/395-3261

Dear Dr. Bromley:

In preparation for your lecture on Wednesday, April 22, 1992, the attached flyer has been circulated at MIT, to local nuclear engineering alumni and interested colleagues in the energy, education and business communities. Also attached is the agenda for your visit.

Please inform us of your audio-visual needs. In the past we have kept a record of the Rose Lectureship which includes the taping of the talk and the question and answer period. It is not a requirement but we would like to know if we may proceed with the planning of this.

We look forward to seeing you soon.

Sincerely,

Elizabeth W. Parmelee
Administrative Staff Assistant

ewp

AGENDA
WEDNESDAY, APRIL 22, 1992
D. ALLAN BROMLEY

- | | |
|-----------|---|
| 2:31 pm | Arrival at Logan Airport, Boston, MA

<i>(Will be met by Alpha Nu Sigma President,
Vinh Dang)</i> |
| 3:00 pm | Meeting with Professor Mujid S. Kazimi, Head, Department of
Nuclear Engineering (<i>Room 24-102</i>) |
| 3:30 pm | Meeting with Dr. Paul E. Gray, Chairman of the MIT
Corporation (<i>Room 5-205</i>) |
| 4:00 pm | David J. Rose Lectureship Presentation (<i>Room 10-250</i>) - open
to the public |
| ~ 5:00 pm | Reception (<i>Lobby 13</i>) - open to lecture attendees |
| 6:00 pm | Visit to Alcator C-Mod Facility* - Plasma Fusion Center
(<i>NW17</i>) |
| 6:45 pm | Departure to Logan Airport |

*If your schedule permits

"Document Control"

TYPE: ACTION
ORIGINATOR: 02

DOCUMENT NUMBER: 9201246
DIRECTORATE STATUS

FROM: HENDERSON, Robert G.: JASON MITRE

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/07/92

SUBJECT: HE IS FORWARDING INFORMATION REGARDING DR. BROMLEY'S
SPEECH TO THE JASON MEETING. THEY ALSO REQUEST DR.
BROMLEY'S CLEARANCES BE PASSED, AND A BIOGRAPHY
FORWARDED.

DIRECTORATE
ASSIGNED: DIRECTOR'S OFFICE

STAFF
ASSIGNED:

*SO
I will have
Chuck Easley
pass DAB's clearance*

ACTION
REQUIRED: AS NECESSARY

STAFF
ACTION:

Shirley Olson D

SENDER'S DUE DATE:

OSTP DUE DATE: 04/17/92
DATE COMPLETED:

STAFF DUE DATE
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE:

EXT: 2734

REMARKS:

Speech delivered on April 24.



OSTP RECEIVED: 04/10/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

CENTRAL FILES:

JASON
MITRE

RECEIVED April 7, 1992

92 APR 10 A 9:50

OSTP
MAIL ROOM

The Honorable D. Allan Bromley
Assistant to the President for Science and Technology
Office of Science and Technology Policy
Old Executive Building
17th and Pennsylvania Avenue NW
Room 360
Washington DC 20506

Dear Dr. Bromley,

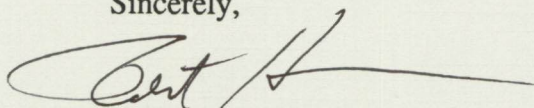
Thank you for agreeing to speak to JASON on 24 April at approximately 11:30 a.m. Your talk, *Competitive Technologies*, including questions, will be scheduled for one hour. We will have available for your use an overhead projector, a 35mm projector and a VHS VCR. If you require any other audio visual aids, please let me know so that special arrangements can be made. I have enclosed a map showing the location of the meeting at the MITRE facility at 7525 Colshire Drive (Hayes Building Auditorium, South Lobby Entrance) in McLean, Virginia.

Please have your active DOD clearance sent to:

The MITRE Corporation
ATTN: Toni Halstead
Mail Stop W511
7525 Colshire Drive
McLean, VA 22102-3481
(703) 883-7272 FAX: (703) 883-1767

Also please FAX a short biography that we can use in introducing your talk directly to me at my FAX number, (703)883-6059. If you have any questions concerning the meeting or your talk, please call me at (703) 883-7382.

Sincerely,



Robert G. Henderson
Director
JASON Program Office

RGH/jgh
Enclosures

JPO-S92-0402

The MITRE Corporation
Washington Center
7525 Colshire Drive
McLean, Virginia 22102-3481
(703) 883-6997

JASON Spring Meeting

April 24 & 25, 1992

The MITRE Corporation
Hayes Building Auditorium

Phone: (703) 883-6123 (for messages)

Follow signs to South Lobby

Directions to The MITRE Corporation (Hayes Building)

From Dulles Airport Take the Dulles Airport Access Road and Toll Road to Exit 10. Take Exit 10A and follow the signs to Route 123 South, Tysons Corner. Bear right onto Route 123 (also called Dolley Madison Boulevard). Immediately after entering Route 123 move to the left lane and make a left turn at the first traffic light, onto Colshire Drive. Follow Colshire Drive to MITRE's Hayes Building (at the top of the hill).

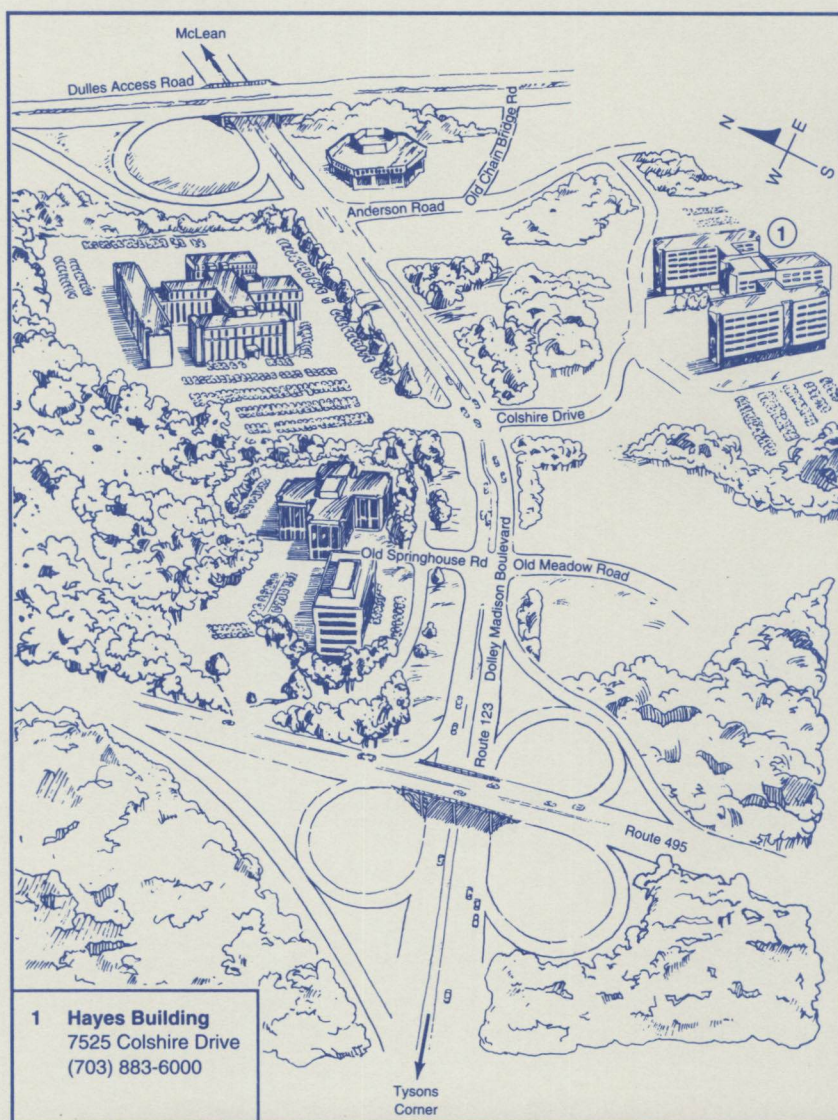
From National Airport Take the George Washington Parkway approximately 6 miles to the Route 123 South, McLean exit. Exit onto Route 123 (also called Dolley Madison Boulevard) and follow it south for approximately 4 miles to its intersection with Colshire Drive. Turn left onto Colshire Drive and follow it to MITRE's Hayes Building at the top of the hill.

OR

Take I-66 West. Exit at Route 267 (Dulles Airport extension). Take Route 123 (Exit 10A) towards Tysons Corner. Turn left at second traffic light on Route 123 (Colshire Drive).

From Route 495 (Beltway) from Maryland Coming from Maryland on Route 495, take Exit 11A (McLean, Route 123). Take Route 123 north to the second traffic light (at Colshire Drive). Go right onto Colshire Drive and follow it to MITRE's Hayes Building at the top of the hill.

From Route 495 (Beltway) from Virginia Coming from Virginia on Route 495, take Exit 11 (McLean, Route 123). After turning onto Route 123 north, go to the second traffic light (at Colshire Drive). Go right onto Colshire Drive and follow it to MITRE's Hayes Building at the top of the hill.



4/7/92

**TENTATIVE LIST OF TOPICS
FOR
1992 JASON SPRING MEETING
24 & 25 April 1992**

TITLE OF TALK	SPEAKER
Northern Hemisphere Ozone Depletion	J. Anderson
Competitive Technologies	A. Bromley
Nuclear Weapon Dismantlement	W. F. Burns
Global Grid	L. Hammerstrom
Proliferation Talk	G. Oehler
73 Easting	J. Orlansky
Technology Thrusts	V. Reis
Advanced Land Combat	J. Richardson
Unmanned Ground Sensors	L. Stotts
DARPA Shallow Water Acoustic Program	C. Stuart

The Office of the Assistant Secretary of Defense has formally notified MITRE/JASON that there is no objection to DoD personnel attending meetings, symposia, luncheons, dinners, etc. sponsored by JASON during 1992. This letter is available from the JASON Program Office.

The essence of this letter is the phrase:

"On reviewing The MITRE Corporation's plans for its annual spring and fall meetings for 1992, the Assistant Secretary of Defense (Public Affairs) finds these events as meeting the standards for participation by DoD personnel under DoD Instruction 5410.20 and DoD Standards of Conduct Directive 5500.7. This finding does not constitute DoD endorsement of attendance, which must be determined by each DoD component."

JASON MEETING
April 24 and 25, 1992

- ☐ Will attend Friday
- ☐ Will attend Saturday
- ☐ Must regret

name

RSVP: 703/883-6883 by 14 April 1992

"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION-SPEECH

DOCUMENT NUMBER: 9201057

ORIGINATOR: 02

SPEECH: YES NO

FROM: PROBERT, Thomas: WORCESTER POLYTECHNIC INSTITUTE

DATE OF EVENT: 05/11/92

THRU:

TENTATIVE DATES:

LOCATION OF EVENT: BOSTON COMPUTER MUSEUM

TIME OF EVENT:

SUBJECT: AN INVITATION TO DELIVER THE KEYNOTE ADDRESS AT
THEIR CONFERENCE ON HIGH PERFORMANCE COMPUTING.

RSVP: 04/14/92

CONTACT PERSON:

CONTACT NUMBER:

INVITATION ACCEPTED?

YES

NO

COPIES TO: INDUSTRIAL

REMARKS:



DATE OF LETTER: 03/27/92

DATE RECEIVED: 03/31/92

FILE: P-INVITATION-SPEECH



WORCESTER
POLYTECHNIC
INSTITUTE

RECEIVED

92 MAR 31 P 1: 12

OSTP
MAIL ROOM

100 Institute Road
Worcester, MA 01609-2280
(508) 831-5616, 5706
Fax: (508) 831-5604

March 27, 1992

Honorable D. Allan Bromley
Assistant to the President for Science & Technology
Old Executive Office Building
17th Avenue & Pennsylvania N.W.
Washington, D.C. 20500

Dear Dr. Bromley:

One tangible and exciting result of the emphasis you and the President have placed on developing new technologies is the establishment of the Center for High Performance Computing at Worcester Polytechnic Institute. This Institute, working in conjunction with the Massachusetts Center for Technology Growth, is sponsoring a symposium on "Economic Opportunities in High Performance Computing" on May 11, 1992, at the Boston Computer Museum.

We would be honored if you would act as keynote speaker for the conference. The event will provide a platform for leading chief executive officers, product planners, strategic planners and government officials to share information and network with the leaders in high performance computing from the education and business communities.

As you know, the Northeast has been particularly hard hit by the recession. There is a strong belief that our human resources, strong educational base and history of parenting new technologies will provide the basis for our recovery. We believe that in addition to informing our audience of important opinion makers, your presence will once again reinforce the commitment of the Bush Administration to the Northeast and to emerging technology.

The primary mission of the Center and this conference is to explore high performance computing technologies and to actively transfer them to industrial use. The Center has positioned itself to be a bridge between federal research on high performance computing technology and commercial applications. These technology transfer programs will encourage new research and spread risk throughout the industry nationwide. The end result will be a more competitive U.S. technology industry worldwide and increased economic opportunity for the entire country.

We hope you will be able to join us.

Sincerely,

Thomas Probert, Ph.D.
Director, Center for High Performance Computing

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9201251

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: MAHAN, Sheila A.: UNIVERSITY AT ALBANY

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/06/92

SUBJECT: SHE IS FORWARDING INFORMATION REGARDING THE
COMMENCEMENT CEREMONY. SHE ALSO REQUESTS INFORMATION
ON DR. BROMLEY'S TRAVEL PLANS WHEN THEY ARE
FINALIZED.

DIRECTORATE

STAFF

ASSIGNED: DIRECTOR'S OFFICE

ASSIGNED:

ACTION

STAFF

REQUIRED: AS NECESSARY

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 04/24/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 04/10/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

CENTRAL FILES:



1251
RECEIVED

Administration 246
Albany, New York 12222

518/442-5400
Fax: 518/442-5418

92 APR 10 A10:01

UNIVERSITY AT ALBANY
STATE UNIVERSITY OF NEW YORK

MAIL ROOM

April 6, 1992

Dr. D. Allan Bromley
The Assistant to the President
for Science and Technology
The White House
Washington, D.C. 20500

Dear Dr. Bromley:

I thought you might be interested in the enclosed copies of our newsletter Update with information about Commencement, May 17, 1992.

I look forward to meeting you then. In the meantime, please contact me when you know your travel plans. We will provide you with a detailed itinerary prior to your arrival.

Sincerely,

Sheila A. Mahan
Senior Assistant to the President

Enclosures

Update

Volume 15, Number 20 April 1, 1992

Inside:
**University
Calendar**



**UNIVERSITY
AT ALBANY**
S • U • N • Y

Commencement Honorees Named

Three honorary degrees will be awarded during the University's 148th Annual Commencement ceremonies on May 17 at the Knickerbocker Arena.

The recipients are D. Allan Bromley, assistant to President Bush, and professors Carol Gilligan of Harvard University and Catharine R. Stimpson of Rutgers University.

Bromley is Assistant to the President for Science and Technology and chair of the President's Council of Advisors on Science and Technology Policy. He will receive an honorary Doctor of Science degree and give the commencement address.

"As one of the leading spokesmen for U.S. science and for international scientific cooperation, Dr. Bromley

reflects two of the most important disciplinary threads of the University at Albany, namely science and public policy," said H. Patrick Swygert, University president.

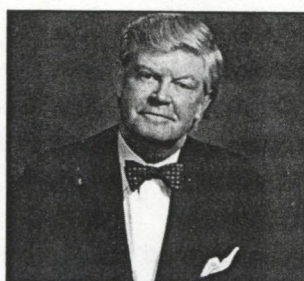


Carol Gilligan

Gilligan will receive an honorary Doctor of Humane Letters degree. A professor of the Harvard School of Education and director of its Center for the Study of Gender, Education and Human Development, she is credited with recognizing the differ-

ences between the moral reasoning of men and women.

"Her work has contributed to a more comprehensive psychology of humankind," Swygert said.



D. Allan Bromley

Stimpson, a leading scholar in English and feminist studies, will receive an honorary Doctor of Humane Letters degree. She recently served as president of the Modern Language Association.

"Catharine Stimpson is a

reflection of this campus's long-standing excellence in literary studies, criticism, writing and pedagogy as well as the current Ph.D. initiative in English," Swygert said.



Catharine R. Stimpson

Commencement weekend activities are scheduled to start with rehearsal on May 15 and include the annual Torch Night ceremony on May 16. The May 17 graduation ceremony is scheduled to start at 10 a.m.

Maggie Ziomek

Sanders Appointed

The Division for Research and Graduate Studies has announced the appointment of Garrett R. Sanders to the position of Assistant Vice President for Research, and director of the Office for Research. Sanders comes to Albany from the University of Rochester, where he oversaw application and pre-award functions for its Office of Research. A former senior grant manager for the National Heart and Lung Institute of the National Institutes for Health, Sanders will manage all application and pre-award components of sponsored fund-

ing activity and represent the Vice President for Research in the negotiation and execution of contracts and funding agreements.

EAP Names Coordinator

The Employee Assistance Program (EAP) Committee has announced the appointment of David Cullen as new EAP coordinator. While renovations for permanent EAP offices in the Student Health Services Building are ongoing, Cullen's office will be ULB-66, with hours from 8:30 a.m. to 3 p.m., Monday through Thursday. By telephone, he can be reached at 442-5483.

Persons With Disabilities Honored

THE LEADER of one of the most respected agencies in the field of disability employment will be the keynote speaker at the University's 10th annual Disabled Student Services Awards Luncheon, the staple event of Abilities Awareness Month.

Paul Hearne, president of the Dole Foundation in Washington, D.C., will address the luncheon, which is by invitation only and scheduled for Wednesday, April 8, from noon to 2 p.m. in the Campus Center Ballroom.

Abilities Awareness Month is designed to increase the awareness of the campus community to persons with disabilities. The luncheon will recognize the accomplishments of individuals who have made outstanding contributions to persons with disabilities.

The Dole Foundation was formed by Senator Bob Dole in 1983. Hearne has been president since 1989 and has brought to the position a wealth of expertise in disability law and employment for people with disabilities, as well as a lifetime of personal experience with his own disability.

"Document Control"

TYPE: ACTION

ORIGINATOR: 02

DOCUMENT NUMBER: 9201374

STATUS I

DIRECTORATE STATUS

FROM: BARRON, Mark: CONVERGENCE NINETY TWO

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/03/92

SUBJECT: HE IS WRITING FOR INFORMATION REGARDING DR.
BROMLEY'S ACCEPTANCE OF THEIR INVITATION TO SPEAK AT
THEIR CONFERENCE.

DIRECTORATE

ASSIGNED: DIRECTOR'S OFFICE

STAFF

ASSIGNED:

ACTION

REQUIRED: DIRECT REPLY

STAFF

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 05/01/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

PHONE:

EXT:

OSTP RECEIVED: 04/15/92

DEPT RECEIVED:

FILE: P-INVITATION-SPEECH

CENTRAL FILES:



1374

INTERNATIONAL CONGRESS ON TRANSPORTATION ELECTRONICS
OCTOBER 19-21, 1992, HYATT REGENCY, DEARBORN, MICHIGAN, USA

2000 ROTUNDA, SRL, RM. E1172 • P.O. BOX 2053 • DEARBORN, MI 48121-2053
(313) 594-7648 92 APR 15 P 4: 23 --FAX (313) 380-6762
FAX (313) 390-6762

USTP
MAIL ROOM

April 3, 1992

The Honorable D. Allan Bromley
Science Advisor to the President
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Dr. Bromley:

I received word from Trevor Jones that you elected to accept our invitation to address the Convergence 92 Conference on October 21, 1992.

As Vice-Chairman of the Conference I am handling the detailed planning and arrangements. I will need to know if you want us to make hotel reservations, and if so at what hotel. The Conference will be held at the Hyatt Regency in Dearborn, so that is one alternative. We also have a block of rooms reserved at the Ritz Carlton Hotel, which is within 1/2 mile of the Hyatt and which is slightly more expensive.

I don't know if Trevor told you that the theme of this year's Conference is "Vehicle Electronics - Meeting Society's Needs: Energy, Environment, Safety". As Trevor mentioned in his February 25 memo to you, it would be interesting for you to summarize the technological challenges and problems confronting the world, how transportation land vehicles are involved, and the part that electronics plays in providing solutions. I believe that our theme provides broad opportunity to discuss a number of issues that would be of interest.

Regarding visual aids for your address, often our keynote speakers do not use visual aids, but if you elect to do so we will need two sets of 35mm slides. We require a double set because the room configuration is such that two screens are used for our General Sessions. We also would like to have a copy of your address, which you can provide to me at the time of the Conference. If you use slides, the prompts should be included in the text so that the projectionists will be synchronized with you.

If there is anything that I can do to be of assistance, or if you have any questions, please feel free to call or fax a note to me.

Mark Barron
Mark Barron



"INVITATION FOR DR. BROMLEY"

TYPE: INVITATION

DOCUMENT NUMBER: 9200935

ORIGINATOR: 02

SPEECH: YES NO

FROM: TIRRELL, DAVID A.: UNIVERSITY OF MASSACHUSETTS AT
AMHERST

DATE OF EVENT: 11/09/92 THRU: 11/10/92
TENTATIVE DATES:

LOCATION OF EVENT: PLAZA HOTEL, NEW YORK

TIME OF EVENT:

SUBJECT: INVITATION TO SPEAK AT THE SYMPOSIUM ENTITLED, "
POLYMER SCIENCE AND TECHNOLOGY FOR THE 21ST
CENTURY".

RSVP: 04/02/92

CONTACT PERSON:

CONTACT NUMBER:

INVITATION ACCEPTED?

YES

NO

COPIES TO: PHYSICAL SCIENCES

REMARKS:

DATE OF LETTER: 03/16/92

DATE RECEIVED: 03/19/92

FILE: P-INVITAITON-SPEECH



UNIVERSITY OF MASSACHUSETTS AT AM.
POLYMER SCIENCE AND ENGINEERING

ROOM 701 • LEDERLE GRADUATE RESEARCH CENTER • AMHERST, MA 01003
(413) 545-0433 • FAX (413) 545-0082

March 16, 1992 12:19 P 4: 54

Dr. D. Allan Bromley 360
Assistant to President for Science and
Technology and Director, Office of
Science and Technology Policy
Old Executive Office Building
17th Street and Pennsylvania Avenue, NW
Washington, DC 20500

MAIL ROOM

Dear Dr. Bromley:

We are organizing a symposium entitled, "Polymer Science and Technology for the 21st Century," to be held November 9-10, 1992, at the Plaza Hotel in New York. The objective of the symposium is to provide a forum for a broadly based discussion of this important area of materials science, and to seek a consensus of academic, industrial and government leaders regarding priorities for research and development in the next decade. The symposium will mark the 65th birthday of Otto Vogl, Herman F. Mark Professor of Polymer Science at the Polytechnic University in New York. Professor Mark will serve as Honorary Chairman.

We would like to ask you to speak at the Symposium. Your support for materials research and development is well known, and has helped to make this area a focal point of our national research agenda. We would be delighted if you would be able to speak on this or a related issue in November.

The program will be a strong one. We presently have commitments from Alexander MacLachlan, Senior Vice President for Technology, Dupont (USA); Paolo Galli, Vice President for Research, Montecatini (Italy); Naoya Yoda, President, Toray Research (Japan); Norbert Bikales, Director, Polymers Program, National Science Foundation (USA); and several distinguished academic speakers from the United States, Japan and Austria. We are seeking a balanced program, both in terms of international perspective, and in terms of strong representation from the industrial, academic and governmental sectors.

I hope that you can accept this invitation. We can be quite flexible in accommodating your schedule within the November 9-10 program dates. Should it be impossible for you to participate personally, we would be pleased to consider an appropriate representative of your office.

Thank you for considering this request.

Sincerely,

David A. Tirrell
for Eli M. Pearce
Symposium Cochairmen

DAT:ls

THE WHITE HOUSE
WASHINGTON

March 31, 1992

Dear Dr. Tirrell:

Thank you for your letter of March 16, 1992, inviting me speak at your symposium entitled "Polymer Science and Technology for the 21st Century" scheduled to be held November 9-10, 1992, at the Plaza Hotel in New York. I apologize for the much belated response.

As much as I would like to join you, I must regretfully decline for scheduling reasons.

I appreciate your thinking of me and offer my best wishes for a successful symposium.

Sincerely yours,

A handwritten signature in black ink, reading "D. Allan Bromley". The signature is fluid and cursive, with the first name "D. Allan" and the last name "Bromley" clearly distinguishable.

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

Dr. David A. Tirrell
University of Massachusetts at Amherst
Room 701
Lederle Graduate Research Center
Amherst, Massachusetts 01003



**UNIVERSITY OF MASSACHUSETTS AT AMHERST
POLYMER SCIENCE AND ENGINEERING**

ROOM 701 • LEDERLE GRADUATE RESEARCH CENTER • AMHERST, MA 01003
(413) 545-0433 • FAX (413) 545-0082

March 16, 1992

RECEIVED
OSTP
MAIL ROOM

Dr. D. Allan Bromley 360
Assistant to President for Science and
Technology and Director, Office of
Science and Technology Policy
Old Executive Office Building
17th Street and Pennsylvania Avenue, NW
Washington, DC 20500

Dear Dr. Bromley:

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I hope that you can accept this invitation. We can be quite flexible in accommodating your schedule within the November 9-10 program dates. Should it be impossible for you to participate personally, we would be pleased to consider an appropriate representative of your office.

Thank you for considering this request.

Sincerely,

David A. Tirrell
for Eli M. Pearce
Symposium Cochairmen

DAT:ls

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9200779

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: KAZIMI, Mujid S.: MIT

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 03/06/92

SUBJECT: HE REQUESTS THE TITLE OF THE SPEECH DR. BROMLEY WILL
BE GIVING AT THE 1992 DAVID J. ROSE LECTURE FOR
THEIR PROGRAM.

DIRECTORATE

STAFF

ASSIGNED: DIRECTOR'S OFFICE

ASSIGNED:



ACTION

STAFF

REQUIRED: DIRECT REPLY

ACTION:

Shuc Osm

SENDER'S DUE DATE:

OSTP DUE DATE: 03/16/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT: 4/1/92

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

EXT: 2734

REMARKS:

*Called + provided title, bio, + times
of arrival + departure. Shuc Osm*

OSTP RECEIVED: 03/10/92
FILE: P-INVITATION-SPEECH

DEPT RECEIVED:

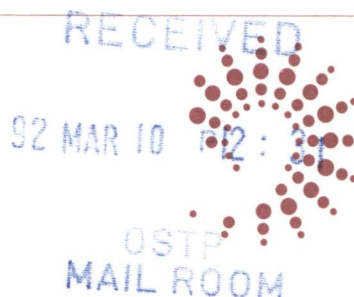
CENTRAL FILES:

Department of
Nuclear
Engineering

Massachusetts
Institute
of Technology

Cambridge
Massachusetts
02139

Room 24-102
(617)253-4206
Fax (617)258-7437



Mujid S. Kazimi
Professor and
Department Head

March 6, 1992

Dr. D. Allan Bromley
Science Advisor to the President
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20506

via facsimile: 202/395-3261

Dear Dr. Bromley:

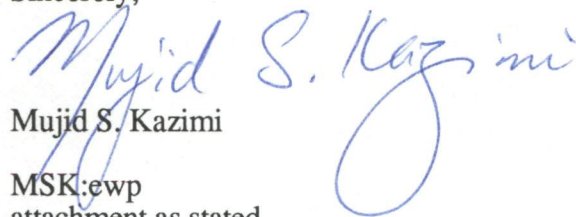
We are delighted with your acceptance of the invitation to give the 1992 David J. Rose Lecture in Nuclear Technology.

I write to confirm the time of the lecture which has been set for 4:00 pm on Wednesday, April 22, 1992. Prior to the lecture, we invite you to meet with senior members of the MIT administration and the Department of Nuclear Engineering. Following the lecture, a reception and dinner will be held in your honor. A tentative schedule is attached.

In order for us to proceed with the announcements for the lecture, we need to know the title of your talk quickly. Also, please let us know if the proposed schedule for your visit is agreeable.

We look forward to your visit. If I can be of help in assisting you with your plans to visit Boston, please let me know.

Sincerely,


Mujid S. Kazimi

MSK:ewp
attachment as stated

*TENTATIVE AGENDA
WEDNESDAY, APRIL 22, 1992
D. ALLAN BROMLEY*

- | | |
|---------|--|
| 2:00 pm | Meeting with Nuclear Engineering Department Head (<i>Rm. 24-102</i>). If your schedule permits, we will arrange for a short visit to department laboratories |
| 3:00 pm | Meeting with Senior Members of the MIT Administration |
| 3:30 pm | Meeting with Press (<i>potentially</i>) |
| 4:00 pm | David J. Rose Lecture (<i>open to the MIT community</i>)
Room 10-250 |
| 5:30 pm | Reception (<i>open to lecture attendees</i>) |
| 7:30 pm | Dinner at the Ritz-Carlton (<i>approximately twenty-five invited guests</i>) |

"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9200693
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: MORRISON, John E.: SECURITY AFFAIRS SUPPORT ASSOCIATION

TO: DR. D.A. BROMLEY

① Stem
② DAB

DATE OF
CORRESPONDENCE: 02/27/92

SUBJECT: HE IS WRITING TO THANK DR. BROMLEY FOR HIS REMARKS
AT THEIR MEETING AND TO ASK FOR A COPY OF THE NOTES
DR. BROMLEY USED TO ASSIST THEM IN TRANSCRIBING
THEIR TAPE OF THE EVENT.

DIRECTORATE STAFF
ASSIGNED: D. Allan Bromley ASSIGNED: Steve Olson

ACTION
REQUIRED: AS NECESSARY STAFF
ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 03/17/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT: 3/18/92

COPIES TO: Steve Olson

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT: 2734

REMARKS:
Copy faxed to Morrison on 3/18/92.

Steve Olson

OSTP RECEIVED: 03/04/92 DEPT RECEIVED:
FILE: P-INVITATION-SPEECH

CENTRAL FILES:



453-1020

CB
Info system to
DAB, CC to Steve Olson



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OSTP
MAIL ROOM

27 February 1992

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FEDERAL EXPRESS

Dr. D. Allan Bromley

Assistant to the President

For Science & Technology

The White House Science & Technology Office

Old Executive Office Bldg.

Rm 360

Washington, D.C. 20506

Dear Dr. Bromley:

You were great!

I can't tell you how very much we appreciate your willingness to spend those hours with us last evening.

We have a recording of your address and will be transcribing it. That transcription task could be eased somewhat if you would be willing to provide us a copy of the notes to which you referred. It is our intention to complete "our version" of the text of your talk which will be provided to you along with our request that we be permitted to publish it in our newsletter, "Colloquy," copies of which I have provided you previously. (It is a very dignified publication.)

Again, many thanks for joining us last evening--we are most indebted.

Faithfully yours,

John E. Morrison, Jr.
John E. Morrison, Jr.
Major General USAF (Ret.)
Executive Vice President