Originally Processed With FOIA(s):
2005-0336-F

FOIA Number:
2005-0336-F

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the George Bush Presidential Library Staff.

Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files

OA/ID Number: 62062
Folder ID Number: 62062-002

Folder Title:
International: General [4 of 6] [1991]

Stack:	Row:	Section:	Shelf:	Position:
	0	0	0	0

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9123215
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: GOLDEN, William T.: CARNEGIE COMMISSION

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/31/91

SUBJECT: LETTER TO DR. GUILLERMO SOBERON REGARDING DR. BROMLEY'S PARTICIPATION IN THE 11/16 MEETING OF WESTERN HEMISPHERE SCIENCE ADVISORS.

****

DIRECTORATE ASSIGNED:

STAFF ASSIGNED:

ACTION REQUIRED:

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 08/05/91 FILE: P-INTERNATIONAL
DEPT RECEIVED:

3216

CARNEGIE COMMISSION
ON SCIENCE, TECHNOLOGY, AND GOVERNMENT

10 WAVERLY PLACE, NEW YORK, NY 10003, PHONE: (212) 998-2150, FAX: (212) 995-3181
EMAIL: CARNEGIE@ACF1.NYU.EDU

RECEIVED
91 AUG 5 A9:31
OFFICE OF THE DIRECTOR

Mr. Golden's private office: 40 Wall Street, New York, NY 10005

July 31, 1991

COMMISSION

William T. Golden
Co-Chair
Joshua Lederberg
Co-Chair
David Z. Robinson
Executive Director
Richard C. Atkinson
Norman R. Augustine
John Brademas
Lewis M. Branscomb
Hon. Jimmy Carter
William T. Coleman, Jr.
Sidney D. Drell
Daniel J. Evans
Andrew J. Goodpaster
Shirley M. Hufstedler
B.R. Inman
Helene L. Kaplan
Donald Kennedy
Charles McC. Mathias, Jr.
William J. Perry
Robert M. Solow
H. Guyford Stever
Sheila E. Widnall
Jerome B. Wiesner

ADVISORY COUNCIL

Graham T. Allison, Jr.
William O. Baker
Harvey Brooks
Harold Brown
James M. Cannon
Ashton B. Carter
Hon. Richard F. Celeste
Hon. Lawton Chiles
Theodore Cooper
Eugene H. Cota-Robles
William Draxton
Thomas Ehrlich
Stuart E. Eizenstat
Hon. Gerald R. Ford
Ralph E. Gomory
Rev. Theodore M. Hesburgh
Walter E. Massey
Rodney W. Nichols
David Packard
Hon. Lewis F. Powell, Jr.
Charles W. Powers
James B. Reston
Alice M. Rivlin
Oscar M. Ruebhausen
Jonas Salk
Maxine F. Singer
Hon. Dick Thornburgh
Adm. James D. Watkins (Ret.)
Herbert F. York
Charles A. Zraket

Dear Memo:

Allan Bromley confirms that he will attend, on Saturday, November 16, the meeting of western hemisphere science advisers that you are convening. He will arrive sometime Friday evening, after conclusion of a meeting of the President's Council of Science and Technology Advisers (PCAST) in Washington. He might be able to stay over until Sunday if that is desirable.

Dr. Bromley asked me to reiterate how pleased he is that you are convening this meeting and he looks forward to his participation.

With warm regards,

Sincerely,

WTG

William T. Golden

Dr. Guillermo Soberon
Fundacion Mexicana para la Salud, A.C.
Av. Contreras No. 516, 4° Piso
San Jeronimo Lidice
10200 Mexico, D.F.

cc: Dra. Graciela Rodriguez

via Fax

bc: Dr. Bromley ✓
Dr. Ratchford

COPY

Logged

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9123568
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: KIM, Jin-Hyun: MINISTRY OF SCIENCE & TECHNOLOGY

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/30/91

SUBJECT: REQUEST TO VISIT KOREA ON YOUR WAY TO THE U.S.-JAPAN JOINT HIGH LEVEL COMMITTEE IN JAPAN AND NOTICE THAT YOU WILL RECEIVE A FORMAL INVITATION TO THE FORUM FROM THE CENTER FOR S&T POLICY, KAIST.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED:

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 09/04/91

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 08/21/91

FILE: P-INTERNATIONAL

DEPT RECEIVED:

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01a. Letter	To: Allan Bromley From: Jin-Hyun Kim Re: Science and Technology cooperation (1 pp.)	7/30/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

OSTP STAFFING SHEET

SUBJECT: Letter to Minister Kim; re: visit to Japan

ORIGINATOR: SB/dm PHONE: 4626

DATE ORIGINATED: 8/24/91 DATE DUE: 9/4/91 CORR TRACKING NO.: 912 3568

EXTERNAL COORDINATION:

	COMMENTS	DATE
5 DIRECTOR		
4 CHIEF OF STAFF		
GENERAL COUNSEL		
3 EXEC. ASST.		

ACTION REQUESTED:

Please return for dispatching. Thanks.
Donna

COORDINATION		DATE	COMMENTS
Henderson, D. A.	Concur ____ Nonconcur ____		
Phillips, W.	Concur ____ Nonconcur ____		
2 Ratchford, J. T.	Concur ✓ Nonconcur ____	8/31/91	
Wong, E.	Concur ____ Nonconcur ____		
1 Border	Concur ✓ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		
	Concur ____ Nonconcur ____		

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01b. Letter	To: Jin-Hyun Kim From: Allan Bromley Re: Science and Technology cooperation (1 pp.)	9/3/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9123346
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: YUXIANG, Chen: INSTITUTE OF FORECASTING & DEVELOPMENT, CHINA

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/29/91

SUBJECT: RE: THE COMPARISON OF BASIC SCIENCE POLICY BETWEEN CHINA AND AMERICA AND A REQUEST TO WRITE TO MRS. ALICE HOGAN AT NSF TO SHOW THE YOUR HIGH ATTENTION TO THE PROJECT.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED: SB / MH

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 08/21/91 STAFF DUE DATE

DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #: CONTACT PERSON:

PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 08/07/91 FILE: P-INTERNATIONAL

DEPT RECEIVED:

3346

RECEIVED
91 AUG 7 P 2:23
OFFICE OF THE DIRECTOR

Prof. Chen Yuxiang
Institute of Forecasting and Development
Hefei University of Technology
Hefei 230009
P.R.China

July 29th 1991

Prof. D. Allan Bromley
The White House
Washington, DC

Daer Prof. D. Allan Bromley,

I felt great honoured to hear from you, that is why that I did not received your letter on time because of my visiting in America from June 8 to July 10 . I am very regret that I had missed a good chance to learm from you. At present, the research work " Development Forecasting and Assessment Research of Basic Research", which is being done in our institute is very similar to that which you charged in 1973, especially, to research work on choice of priority fields of basic research, the work you have done is certainly helpful to us.

During my stay in America, I visited NSF, OTA, George Washington University and Georgia Institute of Technology. I had a discussion with Prof. Alan Porter, John Logsdon and David Roessner who is engaged in science and technology assessment researchand science policy, Through the discussion, we will make a cooperative research work on the comparison of basic science policy between China and America, and the research of priorities choice in science and. And the proposal has been won support of NSFC and NSF. The professors in GT and GW will soon formally put forward a application on research of the project to NSF, and we think, it is very necessary for Sino-U.S. to strenghen science choice and science policy research. We will report our work in time and hope to be helped and supported from you.

It would be better if you can write a letter to Mrs. Alice Hogan, Senior China Program Manager, Division of International Programs, NSF, and show your high attention to the project and expect to be supported by her.

Sincerely yours

Chen Yuxiang

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9123346
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: YUXIANG, Chen: INSTITUTE OF FORECASTING & DEVELOPMENT, CHINA

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/29/91

SUBJECT: RE: THE COMPARISON OF BASIC SCIENCE POLICY BETWEEN CHINA AND AMERICA AND A REQUEST TO WRITE TO MRS. ALICE HOGAN AT NSF TO SHOW THE YOUR HIGH ATTENTION TO THE PROJECT.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED:

no way I don't want to be involved in NSF decisions

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 08/21/91 STAFF DUE DATE

DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #: CONTACT PERSON:

PHONE: EXT:

REMARKS:

OSTP RECEIVED: 08/07/91 FILE: P-INTERNATIONAL

DEPT RECEIVED:

THE WHITE HOUSE

WASHINGTON

September 24, 1991

Dear Dr. Chen:

Thank you for your most recent letter. I am sorry I missed you when you were in the United States. I am glad that you had a successful visit.

Your research on the comparison on basic science policy between China and the U.S., and the research priorities sounds interesting. I hope that you are able to see it through to a successful completion. Best of luck.

Sincerely,



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

Professor Chen Yuxiang
Institute of Forecasting and Development
Hefei University of Technology
Hefei 230009
People's Republic of China

5/30

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9121472

****

FROM: YUXIANG, Chen: INSTITUTE OF FORECASTING & DEVELOPMENT, CHINA

TO: DR. BROMLEY

DATE OF CORRESPONDENCE: 04/29/91

SUBJECT: YALE UNIVERSITY HAS FORWARDED AT LETTER FROM ~~YUXIANG~~ Chen REGARDING HIS TRAVEL & HIS REQUEST TO MEET WITH YOU WHILE IN THE U.S. OR INVITING YOU TO CHINA.

****

ASSIGNED TO: D. Allan Bromley

ACTION REQUIRED: AS NECESSARY

****

SENDER'S DUE DATE: OSTP DUE DATE: 05/30/91

DATE COMPLETED: --------

****

COPIES TO: INTERNATIONAL/POLICY

****

WHITE HOUSE TRACKING #: CONTACT PERSON:

REMARKS:

CLOSED

DATE RECEIVED: 05/21/91 FILE: P- INTERNATIONAL

THE WHITE HOUSE

WASHINGTON

June 10, 1991

Dear Director Chen,

The letter you sent to my former academic home at A. W. Wright Laboratory at Yale University has been forwarded to me here at the White House. I am currently on leave from Yale, and have the honor of serving as the Science Advisor to the President and Director of the Office of Science and Technology Policy.

Your program in New York at the 11th International Forecasting Symposium sounds extremely interesting and I hope that you had a productive week, meeting colleagues from all over the world.

Thank you for your interest in visiting Yale. I hope that you had the opportunity to visit there after the conference in New York.

Sincerely,

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

Director Chen Yuxiang
Institute of Forecasting and Development
Hefei University of Technology
Hefei, Anhuui 230009
People's Republic of China

92416

YALE UNIVERSITY
A. W. WRIGHT NUCLEAR STRUCTURE LABORATORY
P.O. Box 6666, 272 Whitney Avenue, New Haven, Connecticut 06511

OFFICE OF THE DIRECTOR

RECEIVED
91 MAY 21 A10 : 2,
OFFICE OF THE DIRECTOR

May 16, 1991

Dr. Yuxiang Chen
Institute of Forecasting & Development
Hefei University of Technology
Hefei, Anhuui 230009
PEOPLE'S REPUBLIC OF CHINA

Dear Dr. Chen:

Thank you for your letter of April 29, 1991. Professor Bromley is on a Leave of Absence from the University in order to serve as Science Advisor to President Bush.and therefore will not be in New Haven during your visit to the United States.

I will forward your letter to Dr. Bromley's office in Washington, D.C. and hope that you have an enjoyable visit to the United States.

Sincerely yours,

Mary Anne Schulz

Mary Anne Schulz

mts

Director Chen Yuxiang
Institute of Forecasting
and Development
Hefei University of Technology
Hefei, Anhuui 230009
Fax 0086-551-251517
P. R. China
April 29, 1991

Dear Prof. D. Allan Bromley:

Our institute is one which is specially engaged in research on forecasting ,assessment,science policy research and development strategy research.With the support of NSFC (the National Science Foundation of China), our institute is now doing a major project " A research on the Forecasting and Assessment in the Development of Science and Technology" and has achieved initial results. From Minerva, I know you leadershiped the research of physics in science policy.

From June 7 to 12, 1991, I shall attend the 11th International Forecasting Symposium to be held in New York city. I am expecting to have an opportunity of visiting your university (one week) after conference and contact with you, to learn and discuss questions about the choice of priorties fields, and discuss the possibility of inviting you to visit China with the name of NSFC, if you could offer me some financial support ,housing and meals.

Whether or not there will be any chance on your part, I am looking forward to hearing from you soon (Fax 0086-551-251517).

Yours sincerely,

Chen Yuxiang

RÉSUMÉ

NAME	Yuxiang Chen
SEX	Male
PROFESSIONAL POST	Associate Professor
BIRTH	January, 1951

PRESENT POSITION

1. Chairperson of Institute of Forecasting and Development, Hefei University of Technology
2. Standing Deputy Chief Editor of Journal Forecasting
3. Member of Expert Group of Management Science, Science & Technology Commitee, State Education Commission of the People's Republic of China
4. Director of Futurology Association of China
5. Director of Systems Engineering Association of China

EDUCATION AND PROFESSIONAL PRACTICE

Institute of Forecasting and Development, Hefei University of Technology, September 1984 to now

Department of Management Engineering, Hefei University of Technology, January 1983 to September 1984

M.Sc., Industrial Automation Specialty, Beijing Automation Research Institute, Ministry of Machine-Building Industry of the People's Republic of China, September 1979 to December 1982

Computer Specialty, Department of Mathematics, Anhui University, September 1976 to September 1979

MAIN RESEARCH FIELD

1. Technological Forecasting and Technological Assessment
   - A Study of Scientific and Technological Forecasting Theory, Methods and Models

- A Comparison Study of IF and TA in Developing Countries and Developed Countries
- The Present State of TF and TA in China
- Forecasting and Assessment of Preferential Fields in Development of Science and Technology
- The Indicator System of Technological Assessment
- Research on Computer Expert System of Technological Forecasting
- Case Research of TF and TA in China

2. Planning and Strategy Research in Education
   - Analysis and Evaluation of the Quality of Staff Members in China
   - Research on the Present State of Higher Education in Industry
   - Forecasting Theory, Methods and Application in Demands for Technical Personnel
   - Effect Analysis of Education in Development of Industry
   - Research on Planning System Models in Education
   - Case Research on Development Strategy for Education in Machine-Building and Electronics Industries

3. Economic Forecasting
   - Medium-Term and Short-Term Forecasting Research in Machine-Building Industry
   - Research on Marketing Forecasting Theory, Methods and Application in China
   - Market Analysis System
   - Case Research on Marketing Forecasting of Cars, Lathes, TVs, etc.

4. The Government Office and Decision Support Systems Analysis and Design

MAIN ACHIEVEMENTS SCORED IN RECENT YEARS

1. Development Strategy for Education in Machine-Building and Electronics Industries (Ministry of Machine-Building and Electronics Industries), July 1987 to December 1989
2. Comprehensive Assessment for Priority Development Fields of Science and Technology in China's Colleges and Universities (State Education Commission), May 1987 to October 1989
3. Designing for the Government's Office and Decision Support System of Anhui Province (State Science and Technology Commission), May 1988 to October 1989
4. Forecasting and Assessment of Development of Science and Technology in China, winning the Second Prize of Science and Technology Progress of Ministry of Machine-Building and Electronics Industries, April 1986 to February 1988
5. Forecasting for Macroeconomy of Machine-Building Industry, September 1986 to December 1987
6. Models for Comprehensive Development Assessment in Dabie Mountainous Areas, March 1987 to December 1987
7. Forecasting and Comprehensive Development Analysis for the Development of Mechatronics, winning the Third Prize of State Science and Technology Progress, July 1987
8. Forecasting of Demands for Personnel in Anhui Province, winning the First Prize of Anhui Province Science and Technology Progress, December 1986
9. Forecasting and Assessment of Car Market in China in the Year 2000, August 1985 to December 1986
10. Forecasting and Assessment of the Development of Advanced Technology Industries in China (State Science and Technology Commission), July 1988 to December 1989

RESEARCHES UNDER WAY

1. Forecasting of Development of the Disciplines of China's Natural Sciences and Research on Their Assessment System (National Natural Science Foundation of China), 1990 to--
2. Research on Theory and Method for Forecasting of Priority Development Fields of Science and Technology (National

Natural Science Foundation of China), October 1988 to ---

3. Research on Intelligent Decision Support System (State Science and Technology Commission), May 1990 to ---
4. Research on Forecasting Methods of Technology and Economy in Machine-Building and Electronics Industries (National Natural Science Foundation of China), October 1988 to ---

REPRESENTATIVE PUBLICATIONS

1. Research on Development Strategy for Education in Machine-Building and Electronics Industries, 1990, Press of Beijing Institute of Technology
2. Selected Comments on Forecasting Cases of Technology and Economy, 1990, Press of the Chinese University of Science and Technology
3. Forecasting Technique and Its Application, March 1985, Publishing House of Machine-Building Industry

THESES

1. Research on Forecasting System in Medium-Long Term Development of Science and Technology, Natural Science Foundation of China, Vol. IV, 1990
2. Analysis and Design of the Government Office and Support System, Management Engineering Journal, Vol. III,1990
3. Forecasting of Demand for Professional Personnel in Machine-Building Industry of China, Journal of Forecasting, Vol. III, 1990
4. Application of the Delphi Method in China, International Journal of Technological Forecasting and Social Change, No.37, 1990
5. Short-Term Forecasting for Macroeconomy of Machine-Building Industry--Research on Decomposition Method of Time Series, Journal of Systems Engineering, Vol. I, 1989
6. Research on Development Planning Systems of Professional Education, The Annual Meeting of the Second National Education Systems Engineering, October, 1988

7. Erainy Economic Forecasting System, ICSSE' 1988, Proceedings of International Conference on Systems Science and Engineering
8. Experts System Support in Economic Forecasting Analysis, Journal of Forecasting, Vol. IV, 1988
9. Design of Forecasting Plans and Research of Forecasting Analysis, Journal of Forecasting, Vol. I, 1988
10. Comprehensive Assessment for Priority Development Fields of Science and Technology, the First Symposium on Assessment and Forecasting of Advanced Technology Development, December 1987
11. Research and Application on Forecasting System of Demands for Talented Persons, the Fifth Annual Meeting of Systems Engineering Association of China, October, 1987
12. Expanded KSIM Profile Modelling and Its Application, Journal of Systems Engineering, Vol. IV, 1987
13. Micro-Integrated Forecasting of Demands for Qualified Professional Personnel, Journal of Forecasting, Vol. I, 1987

A Proposal for International Cooperation in the Project "A Research on Science Resource Allocation Policy"

I The Introduction to the Project

In order to provide scientific basis for government to formulate the policies of science resource allocation and financial policies. From 1991 onward , IFD will devote itself to the major research project " A Research on the Forecasting and Assessment System in the Development of Science and Technology" supported by NSFC (the National Natural Science Foundation of China). Its objective is that by making a comparative study of the structures of science and technology in various counntries, and by predicting and assessing the development of science , we will make clear and definite the status and function of various disciplines in the development of science and technology so as to provide some basis for formulating the policy regarding resource allocation and financial support.

Starting from the above-mentioned objectives, the contents of the project chiefly include:

1. A comparative study of the structure of science and technology internationally. By selecting a number of typical countries (industrialized countries and developing ones), we shall conduct a comparative study of the structure and distribution of science and technology in these countries, including

(1) A comparative study of the formation , development and evolutional course of the structure of science and technology in various countries;

(2) A comparative study of the relationships between the science and technology structure and social economic development , and of their effects;

(3) Forecasting and analysis of the trend in which the structure of science and technology will change in various countries;

(4) The present situation analysis and assessment of the science and technology structure and resource allocation policy in China.

2. Research on the policies regarding resource allocation and financial support. As things stand , the research which centers around the problems of the coordinated development of science and technology and of the rational allocation of resources still remains a rather difficult field of study which must be further explored. The research in this connection is supposed to include the following:

(1) Research on the sense of value of scientific development in different countries and its influence on scientific development in one's own country.

(2) Research on the criteria of scientific resource allocation.

(3) A comparative study of the policy of financial support given by the National Science Foundation and its influence on the development of scientific causes in one's own country.

(4) We shall,through our research , attempt to come up with some index systems and methods whereby to evaluate the structure of science and technology. And by combining with the demands and conditions , we shall make adjustments in the criteria of the scientific and technical structure so as to provide a basis for the formulation of the policies of resource allocation and development of science and technology.

3. The theory , methodology and model research of science forecasting, science assessment and science resources allocation.

(1) Studying the predictability of scientific activities.We hope to expound in theory the task , function and scope of the research on scientific and technological forecasting and assessment. We also shall perform a study of the characteristics and applicability of varied scientific forecasting and assessment methods , and establish a theoretical and methodological system of scientific forecasting and assessment.

(2) Studying the modes and ways of interaction among different disciplines , and between disciplines and social development goals and conducting research into the influence on assessment indexes and models.

(3) Research of fund distribution models and computer-aided analysis systems.

II. The synopsis of IFD

Ever since 1985 , the Institute of Forecasting and Develpment (IFD) of Hefei University of Technology in China has conducted a great deal of research on scientific and technological forecasting and assessment and in the study of science policies. It has successively undertaken some important research projects such as

. Forecasting and Assessment of the Development of Science and Technology in China;

. A Comprehensive Assessment of the Priority Fields of Science and Technology in China's Colleges and Universities;

. Forecasting and Comprehensive Analysis of the Development of Mechatronics;

. Forecasting and Assessment of the Development of Highly Technical Industries in China.

This Institute has built up a good basis for international cooperation in scientific and technological forecasting and assessment , in structural analysis , and in accumulation of scientific statistical data.

III. Envisagement of International Cooperation

Science is a constantly growing and changing system of knowledge. It is also a social and recognition activity in which all human beings participate. In order to make a systematic study of various problems faced in scientific development, and which are pertinent to the structure of science , the development goals, the policy of financial support , and organization management , we cannot merely base ourselves on the history of the development of science and technology and on the investigations and evaluation of the present situation in our own country. Only by placing the problems in the main system of the development of science and technology in the world , studying the characteristics of scientific activities in the different developmental period of societies and different countries , delving into the relationships between inner operational mechanisms and cultural background and social economic growth in scientific development, and analysing the background and evolutional law of the scientific structure will we be able to have a more profound and comprehensive knowledge of the origin from which this complicated problem arises, and our research results will be far more convincing. It is , therefore, necessary that we should strengthen international cooperation and exchange , conduct a comparative study of the relationships between social economic development and the selection of scientific goals , of the sense of value of scientific development , of the structure and distribution of science and technology as well as of the policy regarding scientific development , and probe into the establishment of relatively feasible methods for scientific and technological forecasting and assessment, and of criteria of the distribution of science and technology and resources allocation . this is of universally international significance to promote the practicality of research on science policies. This project , which is a major project of research on the policy of science and technology appointed by NSFC , has now come into a stage of practical research. Our current work is concentrated on the analysis of the historical evolutional process of the structure of China's science and technology. In order to speed up the research pace and raise the research levels , IFD wishes to encourage international cooperation. And according to the principle of equality and mutual benefits , IFD is ready to carry out cooperation in this project with relevant research institutions and experts. Our suggestions are as follows:

(1) We can jointly carry out cooperational research by selecting the above- mentioned contents or a particular subject. IFD will further provide detailed information at the request of our

cooperation agreement so that we will jointly apply to relevant organizations for financial support (Our side is NSFC , the other side may apply to the National Natural Science Foundation of its own country or to other foundations).

(2) The contents of our cooperation research include:

. Exchanging personnel to either country to engage in advanced studies and cooperation research , including inspections, giving lectures, consultations and discussions .

. Carrying out cooperation research and exchange on forecasting of the development of science and technology , assessment of science and technology , the theory , methods , models and software of scientific and technical resource allocation.

. Exchange of research information.

. Holding small international academic discussions on special topics, and so on.

We are expecting to obtain the understanding of relevant experts and scientific research institutions to jointly promote the research in this field. Experts and institutions who are interested in this project are welcome to make contact with IFD.

Chairperson of the Project: Director , Prof. Chen Yuxiang

Address : Institute of Forecasting and Development
Hefei University of Technology
Hefei, Anhui 230009
P. R. China

Telephone: 0551-254711-2558

Fax: 0551-251517

Logged

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9121997
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: BANKS, Peter M.: UNIVERSITY OF MICHIGAN

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/26/91

SUBJECT: CONCERN THAT FORCES WITHIN DOD THAT ARE MOVING TO CONSOLIDATE OPERATIONS & REDUCE EXPENDITURES WILL MOVE TO UTILIZE MONEY TO MEET NEEDS USED OUTSIDE OF RESEARCH.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED: CHerzfeld

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 07/19/91 STAFF DUE DATE 8/22/91

DATE COMPLETED: DATE COMPLETED/DEPT: 02

****

COPIES TO: D. Allan Bromley

CLOSED

****

WHITE HOUSE TRACKING #: CONTACT PERSON:

PHONE: EXT:

REMARKS:

No comment

No comment CMH

OSTP RECEIVED: 07/05/91 FILE: P-INTERNATIONAL-POLICY

DEPT RECEIVED:

Mary Suit, Fyl

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9121997
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: BANKS, Peter M.: UNIVERSITY OF MICHIGAN

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/26/91

SUBJECT: CONCERN THAT FORCES WITHIN DOD THAT ARE MOVING TO CONSOLIDATE OPERATIONS & REDUCE EXPENDITURES WILL MOVE TO UTILIZE MONEY TO MEET NEEDS USED OUTSIDE OF RESEARCH.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED: CHerzfeld

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 07/19/91 STAFF DUE DATE

DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

Dr. Herzfeld, 8/21
This had come to Dr. Wong, although it had been directed to you. Dr. Wong has no comment.
Dolly Freeman

****

WHITE HOUSE TRACKING #: CONTACT P:
PHON:

REMARKS:

No comment

OSTP RECEIVED: 07/05/91 FILE: B-INTERNATIONAL-POLICY

DEPT RECEIVED:

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9121997
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: BANKS, Peter M.: UNIVERSITY OF MICHIGAN

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/26/91

SUBJECT: CONCERN THAT FORCES WITHIN DOD THAT ARE MOVING TO CONSOLIDATE OPERATIONS & REDUCE EXPENDITURES WILL MOVE TO UTILIZE MONEY TO MEET NEEDS USED OUTSIDE OF RESEARCH.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED:

Head

DAB
How about Charlie Herfeld preparing this response for you? 7/10

ACTION REQUIRED: FOR DAB'S SIGNATURE

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 07/19/91 STAFF DUE DATE

DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

OSTP RECEIVED: 07/05/91 FILE: B-INTERNATIONAL-POLICY

DEPT RECEIVED:

1997

Peter M. Banks, Dean

College of Engineering
The University of Michigan
2401 EECS Building
Ann Arbor, Michigan 48109-2116

313/764-8475
313/763-9487 (FAX)
Peter_Banks@um.cc.umich.edu

RECEIVED
91 JUL 5 A8:09
OFFICE OF THE DIRECTOR

June 26, 1991

Dr. Allan Bromley
Assistant to the President for
Science and Technology
Director, Office of Science and Technical Policy
Old Executive Office Building
17th Street and Pennsylvania Avenue, N.W.
Washington, DC 20506

Dear Dr. Bromley:

We are concerned that forces within the Department of Defense that are moving to consolidate operations and reduce expenditures will move to utilize 6.1 dollars to meet needs outside of research. Such changes would damage the long standing DoD-University relationship which has served many aspects of the nation's needs. Recent examples of such efforts may include the decision to eliminate the physics directorate at the Air Force Office of Scientific Research and the consideration given to the assimilation of the Army Research Office into the Army laboratory system.

In view of the precarious position of these critical programs, we would like to propose that the administration consider reorganizing these groups to give them the same autonomy given to the Office of Naval Research. Namely, AO and AFOSR should be children of the Congress and receive their budget appropriation directly from the Congress. In this way, Congress would be able to reverse a long time trend of decreasing real dollars for the critical individual investigator programs that form the basis for extramural DoD engineering and science research. In addition, this would go a long way to reducing the year-to-year fluctuations in commitment to research that these offices experience because of changes in local administration.

In closing, there are many indicators suggesting a real decline in availability of dollars for individual investigator basic research which forms a major component in the nation's ability to provide advanced training in science and technology. We hope the administration will take some action in this matter to protect these programs against further erosion.

Sincerely,

Peter M. Banks

Peter M. Banks

PMB/ras

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9122878
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: BARUCH, Jordan J.

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/25/91

SUBJECT: AN ADDITIONAL ENCLOSURE TO HIS DALIAN LETTER; A MEMORANDUM FOR J. MICHAEL FARREN REGARDING CHINESE MANAGEMENT PROGRAM AT DALIAN.

****

DIRECTORATE ASSIGNED: STAFF ASSIGNED:

ACTION REQUIRED: STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: INTERNATIONAL/POLICY
D. Allan Bromley

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS: Cross reference with document #9122804, which is an action item to International.

CLOSED

OSTP RECEIVED: 07/26/91 FILE: P-INTERNATIONAL
DEPT RECEIVED:

Jordan J. Baruch
2700 Chesapeake St. NW
Washington DC 20008

Sorry -
I meant to include
this with my Dalkon
letter.

Jordan

508-759-7006
Phone ~~202-362-4860~~

2878
1532

Jon

THE WHITE HOUSE

WASHINGTON

May 6, 1991

Richard Lee

FYI

MEMORANDUM FOR J. MICHAEL FARREN
Under Secretary for International Trade
Department of Commerce

SUBJECT: Chinese Management Program at Dalian

Mike -

You sent me a memorandum concerning the Dalian Management Program in February. I am sorry for the long delay in response, but my staff has been double checking the issue for me, given the political sensitivity of the issue last year and the policy concerns of this administration.

It is my belief that the MBA program is ready to be phased out, as agreed last year. The Executive Management Program, however, continues to be of long term benefit to US policy toward China, and it deserves to live out the life span of the governing protocol, until 1994.

I am aware that private funding has not yet developed to cover the Department of Commerce's costs. I hope, however, that this modest program can continue to receive support from you until private funding develops, or the protocol expires.

Robert M. Gates
Assistant to the President
and Deputy for National Security
Affairs

OFFICE OF THE DIRECTOR
91 JUL 26 P3:50
RECEIVED

"CORRESPONDENCE TRACKING"

TYPE: ACTION/MEETING REQUEST DOCUMENT NUMBER: 9123047
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: MAYOR, Frederico: UNESCO

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/24/91

SUBJECT: RE: U.S. RELATIONS WITH UNESCO AND A REQUEST MEET WHEN VISITING PARIS.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY

STAFF ASSIGNED:

ACTION REQUIRED: DRAFT FOR DAB

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 08/13/91

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

R Venkataraman
Rama Rao

CLOSED

OSTP RECEIVED: 07/30/91

FILE: P-INTERNATIONAL

DEPT RECEIVED:

THE WHITE HOUSE

WASHINGTON

August 8, 1991

Dear Dr. Mayor:

Thank you for your letter of July 24. I, too, enjoyed our discussion at the Academy dinner on June 24. We certainly face great challenges and opportunities in our relations with developing countries, and I am pleased that UNESCO is continuing to foster north-south cooperation.

As you know, the decision as to whether the United States will renew its relations with UNESCO is a complex one involving many U.S. Government agencies as well as the private sector and academic community. I will keep your views in mind during our discussions on this matter.

Sincerely,

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

Dr. Federico Mayor
The Director General
United Nations Educational,
Scientific and Cultural Organization
7, Place de Fontenoy
75700 Paris, France

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02. Letter	To: Allan Bromley From: Federico Mayor Re: US Relations with UNESCO (2 pp.)	7/24/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION/MEETING REQUEST DOCUMENT NUMBER: 9123050
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: LAUSTRIAT, Gilbert: ULP

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/24/91

SUBJECT: RE: A RESPONSE TO DR. BROMLEY'S LETTER OF 07/09/91 AND A REQUEST TO MEET AND DISCUSS RECENT DEVELOPMENTS AT ULP DURING THE DR HONORIS CAUSA CEREMONY 12/06.

****

DIRECTORATE ASSIGNED: D. Allan Bromley

STAFF ASSIGNED:

ACTION REQUIRED: AS NECESSARY

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 08/13/91

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: INTERNATIONAL/POLICY

****

CLOSED

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

OSTP RECEIVED: 07/30/91

FILE: P-INTERNATIONAL*INVITE-MEETING

DEPT RECEIVED:

3050

UNIVERSITE
LOUIS PASTEUR
STRASBOURG

RECEIVED
91 JUL 30 P3:11
OFFICE OF THE
DIRECTOR

Professeur D. Allan BROMLEY
Assistant to the president for
Science and Technology
The White House
Washington

Strasbourg, July 24, 1991

Le Président

Dear Professor Bromley,

I thank you for your very substantial and friendly letter of July 9.

As you may imagine, I have read with interest your comment on the Human Frontier Science Program, the future of which has been a cause of concern to me over the last few months. As you note yourself no one questions the high scientific quality of the Program and I think it would be a pity for science if, for financial and political reasons of various sorts, it were not to be prolonged. I am cheered up by your letter. I have also noted the confidentiality of the information and will treat it as such, but at the same time I am looking forward to some kind of official annoucement.

I have also noted that you are trying to make it possible for you to attend the Dr Honoris Causa ceremony to take place on December 6 (I will make sure you get the programme as soon as it is finalized). It would be an honour for the University Louis Pasteur and a pleasure for me and other colleagues to welcome you again in Strasbourg on this occasion. I would be delighted to have a chance to discuss with your recent developments at ULP of a general as as of an international nature.

With my very best wishes,

Laustriat

Gilbert LAUSTRIAT

4, rue Blaise Pascal
B.P. 1032 F
67070 Strasbourg Cedex
Tél. (33) 88 41 61 25
Fax : (33) 88 60 75 50
Télex : ULP 870 260 F

Determined NOT to be
National Security Classified Marking
By MB (NLGB) on 5/13/10

THE WHITE HOUSE

WASHINGTON

September 20, 1991

PERSONAL AND CONFIDENTIAL

Dear President Laustriat:

My apologies for the delay in responding to your note of July 24 which arrived when I was on vacation.

I am still looking forward to being present for the ceremony that you planned on December 6 and the symposium on the preceding day about which I had an opportunity to talk with Andre Gallmann and Walter Greiner during a very brief stop in Frankfurt early in August.

With respect to the Human Frontier Science Program, I am happy to be able to say that major progress has been made and I shall be presenting the results to my Japanese colleagues in mid-October when I shall be visiting Tokyo as the Chairman of the American side of the US/Japan Joint Commission. Until such time, this information must remain confidential but I am confident that both you and the Japanese will be pleased with the results.

With warmest best wishes,

Sincerely yours,

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

Professor Gilbert Laustriat
President
Louis Pasteur University
4, rue Blaise Pascal
B.P. 1032 F
67070 Strasbourg Cedex
France

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9122639
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: SHIMAMOTO, Yoshio

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/12/91

SUBJECT: COMMENTS/CONCLUSIONS ON THE COMPARISON OF THE ORIGINAL AND ENGLISH VERSIONS OF MITI'S "REPORT OF THE RESEARCH COMMITTEE ON NEW INFORMATION PROCESSING TECHNOLOGY" (PRIOR TO CORRECTIONS).

****

DIRECTORATE ASSIGNED: STAFF ASSIGNED:

ACTION REQUIRED: STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY
INDUSTRIAL

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 07/19/91 FILE: P-INTERNATIONAL*INDUSTRIAL
DEPT RECEIVED:

RECEIVED

91 JUL 16 A10:54

OFFICE OF THE DIRECTOR

July 12, 1991

DEAR ALLAN -

YOU OBSERVE THAT THE ENCLOSED IS IN NO SHAPE TO BE SENT TO YOU. HOWEVER, AFTER THREE DAYS OF WAITING AND THEN TOLD THAT IT IS READY LATE FRIDAY AFTERNOON, I HAVE DECIDED TO SEND IT TO YOU AS IS RATHER THAN WAIT UNTIL MONDAY AFTER CORRECTIONS ARE MADE.

SORRY ABOUT THE SNAFU.

YOSHIO

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
03. Letter	To: Allan Bromley From: Yoshio Shimamoto Re: MITI's Research Committee Report (1 pp.)	7/12/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

ATTACHMENT: A

A Crisp Look at the Fuzzy Buzzword

Tempting as it is, we will try to resist "fuzzy" puns in this look at Japan's latest techno-fad. As shops across the nation sprout fuzzy fridges, air conditioners, washing machines and vacuum cleaners, journalists and copywriters have exploited every corny quip imaginable. The verbiage threatens to obscure what promises to be a useful approach to solving all sorts of sticky technological problems.

First, for those who are still unclear on fuzzy theory and how it applies to today's technology, a quick catch-up.

"Fuzzy logic" is an offshoot of modern mathematical theory first put forward by Professor Lofti Zadeh of the University of California at Berkeley in 1965.

Departing from the ordinary true/not-true precision of ordinary mathematics, "fuzzy logic" allows descriptions of events and conditions in the vague ways that humans see them. "A little more," "too hot" and "almost round" are all pretty simple concepts to us, but they're incomprehensible in the black/white, yes/no world of digital control computers. With fuzzy systems, however, computers can be trained to "see in shades of gray," paradoxically making them more precise, flexible and efficient.

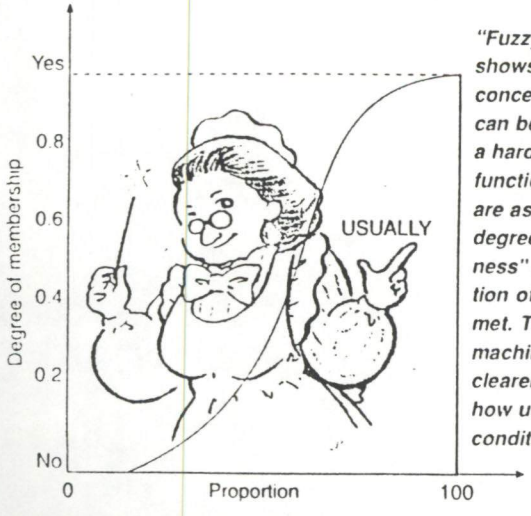
Members of the Fuzzy Set

The theory isn't as vague as it sounds. The basic concept is the "fuzzy set," as opposed to the conventional "crisp" mathematical set. A crisp set is sharply defined; an object is either a member of the set or not. In a fuzzy set, the transition from membership to nonmembership is gradual, and objects are assigned varying degrees of membership. Using this approach, it becomes easier to describe vague sets like "blond men" and "compact cars."

By studying human reactions and using them to assign values to objects and situations as a series of "fuzzy rules," human expertise and flexibility can be transferred to machines. Unexpected situations that cause normal systems to halt in confusion can be handled more flexibly by fuzzy systems, which also makes programming simpler and cheaper. Some systems are already outdoing their human teachers.

Over the past decade, Japanese manufacturers have begun to incorporate "fuzziness" into a succession of electronic products. The fuzzy set of experiences that guide the gentle hands of Japan's veteran subway motormen was incorporated into an automatic braking system for the Sendai urban rail system. New washers make fuzzy decisions as to how much scrubbing clothes really need. Vacuums decide how hard to suck, and so on.

Useful gadgets like these have sparked consumer interest, but researchers are quickly moving on to bigger game.



"Fuzzy Sensei" shows how a vague concept like "usually" can be converted into a hard mathematical function. Conditions are assigned higher degrees of "usually-ness" as the proportion of the criterion is met. This gives the machine a much clearer "idea" of just how usual each condition is.

Fuzzy the Banker

The MITI-affiliated Laboratory for International Fuzzy Engineering Research (LIFE), set up in 1989, is working on a fuzzy-logic system to assist foreign-exchange traders. The system will incorporate the expertise of veteran dealers, and respond to various financial data and news inputs with suggestions for buying or selling.

Conventional computer decision-making systems for exchange dealing are based on statistical models, and can't cope with imprecise inputs like the deliberately fuzzy statements issued by central bankers. But in the real world, it is intuitive interpretations of this kind of news that move markets. Within six years LIFE hopes to perfect a system that can combine hard and fuzzy data as well or better than humans.

Fujitsu, a major computer maker, is using a computer-aided instruction (CAI) system that employs fuzzy logic to train software engineers. Where standard CAI systems teach lessons in a fixed order, Fujitsu's can furnish instruction in the order that best suits the student.

Fuzzy logic helps assess quiz results. Standard CAI systems can only decide whether the student passed or failed. Fuzzy logic allows the computer to make judgments like "she should have done better" or "he made some lucky guesses" in much the same way a human teacher might. This way, the computer can determine which concepts the student needs to study further. In some cases, the computer may decide the student knows the material despite a mediocre score; in others, the computer may believe a student was merely lucky (or cheated) and prescribe further study.

Fuzzy the Weatherman

Because many of the clues that could predict weather or earthquakes don't slot neatly into crisp sets, Japan's Science and Technology Agency has launched a five-year, ¥1-billion research project to see how fuzzy logic could help.

Meanwhile, at Kumamoto University researcher Takeshi Yamakawa has developed a computer-chip set designed to process fuzzy data faster. Yamakawa's design consists of two elements, a "rule" chip and a "defuzzifier" chip. The rule chip can handle a million calculations per second to infer correct answers from built-in fuzzy-set rules. The defuzzifier chip converts those answers into analog numbers. NASA has asked Yamakawa for permission to use his chip technology to help control docking maneuvers in the space shuttle.

But for Japanese consumers, the most famous member of Japan's fuzzy set is "Fuzzy Sensei" (teacher), a cartoon granny figure who touts Sanyo's fuzzy appliances.

SCIENCE AND TECHNOLOGY

The generation game

TOKYO

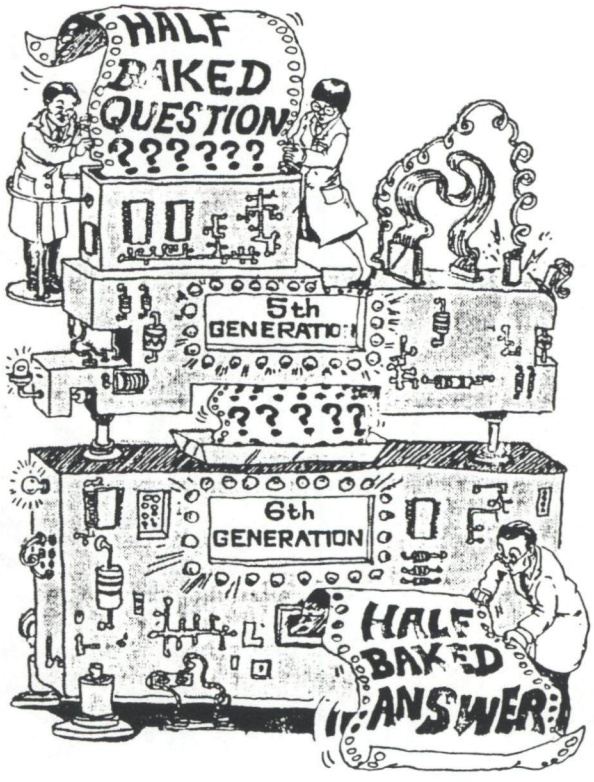
AFTER ten years and ¥60 billion ($440m) of taxpayers' money, Japan's fifth-generation computer project—aimed at developing computers able to "infer" complete answers from half-baked questions—will soon be wound up. The collaborative project, the first in recent years to be financed entirely by the Japanese government, was conceived to help local computer firms "leapfrog IBM". But compared with the government's previous catch-up programmes for microchips and supercomputers, its attempt to nurture an infant "inference industry" has been a flop.

The money has not been entirely wasted. Corporate Japan has kept a foot in the door of "massively parallel" processing, allowing it to look on with understanding as dozens of young American firms with novel computing inventions have scampered off through the doorway and down various passages. More important, the 100 or so computer scientists assembled over the past decade at the Institute for New Generation Computer Technology (ICOT) have acquired skills needed to design the latest artificial-intelligence (AI) hardware and the software to make it work. They will go back to their government and corporate laboratories and spread the AI gospel.

Still, measured against its proclaimed aims, the programme failed. So what should come next? More of the same, according to the Ministry of International Trade and Industry (MITI). This time, though, MITI wants to include the one computer group whose absence last time did more than anything to damage its fifth-generation project. Top of the list of companies that it wants to sign up for its new sixth-generation project is IBM. Two other foreign computer makers, AT&T and Siemens, will also be invited to join, along with nine Japanese firms.

Back in 1982 the men from MITI imagined that the proposed "inference engine" would hand Japanese computer firms a winner. What they never bargained for was the reluctance of Fujitsu, Hitachi, NEC and other Japanese computer companies to abandon their slavish following of IBM and go out on a limb with a computer concept all of their own. Without the confidence of knowing that the world's leading computer manufacturer was also making a big commitment to inference technology, the Japanese companies stayed with the tried and true. "Industry tends to stick to past experiences", moans ICOT's director, Kazuhiro Fuchi, and "they still want to follow IBM."

It was ambition that made the fifth-generation project try to leapfrog IBM rather than bring it in. Ambition hurt it in other ways, too. The project tried to develop an all-purpose AI machine—a computer that could, in effect, mimic the processes of human thought, which provide an uncanny ability to make guesses and muddle through ignorance. A prototype was eventually built using 64 microprocessors wired up as a parallel array. The machine could design a complicated microchip, analyse an English sentence, provide legal advice based on previous cases, and play a handy game of "Go". Those are all specialised, if noble, tasks; the computer organised to perform them is a far cry from the all-purpose AI machine that ICOT originally dreamed of. By the time the fifth-generation project ends next March, ICOT hopes to have something bigger, if not a great deal better: an array processor with 1,000 elements comparable to some of the "massively parallel" speed demons in the United States.



Officially called the New Information Processing Technology (NIPT), the sixth-generation project will take over where ICOT's work leaves off. Current thinking is that a new institute will be established for NIPT under the direction of Shun-ichi Amari, a leading computer scientist at Tokyo University. Setting the priorities will be a research committee that includes R&D bosses from NTT, Fujitsu, Hitachi, NEC, Mitsubishi Electric, Toshiba, Sharp and Oki as well as ICOT.

The lesson learnt from the past ten years is that ICOT bit off far more than it could chew. By contrast, NIPT will have more modest goals. The ultimate aim is still to "process information intuitively without the need for programs." But the task is to be broken down into more definable AI questions. Like how to make a computer work with ambiguous information? Or how to get it to adapt to change and generalise from its own experience? Or how to make it tackle monstrously large problems by discarding unnecessary data?

The kind of test question that Japanese officials cite as an example of sixth-generation computing is how to chose ten out of 100 stockmarket shares for maximum return. Sounds trivial? A conventional mainframe computer capable of 100 MIPS (millions of instructions per second) would take 30,000 years to come up with an answer. A good fund manager working with pencil, paper, a pocket calculator and well trained intuition might take a week or two. If NIPT ever manages to do its job, the task would be narrowed down to minutes.

The key will be endowing a computer with the ability to learn. That means looking at the way the brain works. At one end of the scale, the NIPT team intends exploring stacks of silicon wafers containing up to a billion interconnected neuron-like elements. At the other extreme, research is to tackle the basics of pattern recognition. If it all sounds familiar, it is. Wherever scientists pursue the holy grail of artificial intelligence,

the same topics are on their agenda. The one difference that NIPT could bring is an extraordinary proficiency in optical microchips—a technology that half a dozen big Japanese laboratories have been honing to perfection in a bid to give machines a child-like ability to read. Japanese researchers have also had more practical experience than their colleagues abroad in exploiting "fuzzy" logic with its capacity for human-like judgments (and for spurring technology-minded Japanese consumers on to excited buying sprees).

As a sprat to catch the American mackerel, MITI is now offering to share the patents resulting from the joint research with foreign participants. Officials say they are even prepared to revise Japan's patent law so that foreign firms can benefit more from participating in the NIPT project. This month, MITI is to establish a committee of experts to determine the research priorities and the contributions expected from participants in the sixth-generation project. The aim is to launch the project in April 1992. The amount of government money has yet to be determined.

Domesticating mushrooms

Muck and magic

A MUSHROOM can be a valuable thing. The autumnal woods of Italy, France and many other places are full of wandering figures in search of ceps (or porcini), chanterelles, blewits, horns of plenty, shaggy inkcaps, puffballs, oyster mushrooms, honey fungus, hedgehog fungus and the like. In Poland pickers make a living supplying wild fungi to markets. In Scotland a walk in the woods can turn a profit if you find chanterelles to sell to the village shop. In Italy pasta is stuffed with porcini and exported.



A small family business

After a decade that saw salmon domesticated, kiwi fruits tamed, venison farmed and quails' eggs made cheap, it is not surprising that exotic fungi are next. The ordinary domesticated mushroom is being joined by an increasing variety of its wild cousins. Dried shiitake mushrooms are now sold in the United States, and fresh oyster mushrooms in Britain. About five more species are grown commercially, mostly in Asia. But domesticating wild mushrooms is not proving easy. Most of those who have tried are pessimistic. They are up against some intransigent biology.

The problem is the unique way that fungi grow. The bit you see and eat is merely the fruiting body. Most of the fungus is a tangle of tentacles called the mycelium. This is not arranged into cells with nuclei, as most other creatures are. Instead the tentacles spread into their food—be it dead wood, mucky soil or stale bread—and move their nuclei, and the rest of their contents, to the places where growth is going on.

Many fungi live in the soil, as partners to plants. There is a bargain between the two. In exchange for sugar from the plant, the fungus passes on minerals and nutrients that it has extracted from the soil. This "mycorhizal" habit hinders would-be domesticators, for the fungus cannot live without the plant. Truffles, for example, have signed up with the roots of oak trees. After many attempts at cultivating truffles, the French have fallen back on planting oaks in suitable places and inoculating their roots with the crop—a kind of ranching. A retired immunologist in California has done a little better. Moshe Shifrine is now producing 60lb (27 kilograms) of miniature truffles every week, grown in a laboratory medium; the California Truffle company turns them into oil and paste.

Getting the fungus to grow is only half the battle; you must also make it fruit. Although ceps are mycorhizal, their mycelium can be grown on compost. But it will not produce the edible fruiting bodies. Common mushrooms are induced to fruit by being "cased" with moist peat and chalk while the humidity and carbon-dioxide concentration are increased. Oyster mushrooms fruit when the temperature is suddenly dropped and the light turned up.

A company in Michigan called Company M has recently patented a fruiting method applicable to morels; Domino's Pizza has licensed the patent, and a pilot plant produces 300lb (136kg) a week. But finding the right recipe to induce fruiting is more a matter of trial and error than well-reasoned science; the errors are not particularly informative, which makes progress hard. David Wood, of Britain's Horticulture Research International (the former Glasshouse Crops Research Institute), says only long-term studies could find the fruiting formula for other wild mushrooms. It is hard to obtain the money for such work—even though Britain, with its imperial legacy of exotic agronomy, is rich in mycological expertise.

An alternative to domesticating wild mushrooms would be to improve domesticated mushrooms. But selective breeding is almost impossible. Ordinary mushrooms are not much given to sex, so different strains cannot be crossed. Instead, Dr Wood and his colleagues are trying to find a way of injecting genes directly into mushrooms, but that is made difficult by their habit of keeping several nuclei in every cell. The wild mushroom remains curiously unwilling to be tamed.

Muscular dystrophy

A finger in the dyke

BERKELEY, CALIFORNIA

IT IS tempting, but wrong, to think that a disease is vanquished once its genetic origins have been unearthed. In 1986 the defect that leads to Duchenne's muscular dystrophy, the most common inherited muscle disorder, was pinned to a bit of DNA that makes a protein called dystrophin. Before this knowledge can be turned into a cure, scientists need to understand how dystrophin causes the disease. Although its exact role remains shrouded, research is discovering how muscles waste away without it. This research points the way to potential new drugs.

The disease afflicts about one in every 3,400 boys. It causes weakness in the limbs as muscles are gradually supplanted by useless connective tissue, leading to disability and then death—usually before the sufferer passes his mid-20s. In healthy limbs, dystrophin is hooked up to the inside of the membrane which surrounds each muscle cell. Somehow it keeps the cell working. Experiments in which cells affected by Duchenne's muscular dystrophy were fused with nascent healthy muscle cells (known as myoblasts) have succeeded in restoring dystrophin, and some vitality, to the sick cells. But injecting lots of myoblasts into a

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9122283
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: MASSEY, Walter E.: NATIONAL SCIENCE FOUNDATION

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/12/91

SUBJECT: RE: STATUS REPORT FOR NSF, SPECIFICALLY A SUMMARY OF THEIR PROGRESS ON THE DEVELOPMENT OF A NEW AND IMPROVED WORKING RELATIONSHIP WITH THE INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS (IIASA).

****

DIRECTORATE ASSIGNED:

STAFF ASSIGNED:

ACTION REQUIRED:

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY
ENVIRONMENT

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 07/17/91

FILE: P-INTERNATIONAL

DEPT RECEIVED:

3283

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

RECEIVED
91 JUL 17 P2:43
OFFICE OF THE DIRECTOR

OFFICE OF THE DIRECTOR

July 12, 1991

Dr. D. Allan Bromley
Assistant to the President for Science and Technology
Executive Office of the President
Washington, DC 20506

Dear Allan:

Over the past eighteen months, the National Science Foundation has pursued the mandate that you assigned to us to develop a new and improved working relationship with the International Institute for Applied Systems Analysis (IIASA). The following is a summary of our progress.

Last month, the IIASA Council adopted a five-year plan to provide direction for IIASA's scientific programs as a framework for preparation of IIASA's annual program of work and budget. Each annual program plan will serve as a proposal for external review and funding, particularly by the United States. Program plans will identify the specific scientific problems IIASA intends to address, the approach it intends to use, the staff that will implement those activities, and the expected costs of each major activity.

As a result of the Council's decisions, we expect IIASA to submit to the Foundation in the fall a proposal for U.S. multi-year support of its programmatic research at an annual level of approximately $2 million, to begin early in Calendar Year 1992. In addition, the American Academy of Arts and Sciences is expected to submit a proposal for multi-year support of the U.S. Committee for IIASA.

I have requested that $2,000,000 be set aside at the beginning of Fiscal Year 1992 to support this activity during Calendar Year 1992. We intend to obtain programmatic review of the IIASA proposal, in part through the interagency Committee on Earth and Environmental Sciences (CEES) and its Working Groups on Global Change (WGGC) and on Mitigation and Response Strategies (MARS). The IIASA Council, Director, and staff have indicated that they are prepared to work with us to permit a review to be completed early in 1992.

For Fiscal Year 1993 and beyond, the Foundation will include $2.0 million for programmatic support in its budget request. Annual reviews of the proposals for such support will be obtained as outlined earlier.

Dr. D. Allan Bromley

IIASA will be encouraged to submit additional requests for specific new programs to other Federal agencies for review and funding on a case-by-case basis, with the understanding that any future growth in U.S. programmatic support be considered through this route.

We have worked closely with your staff and with other interested Federal agencies to develop support for IIASA for the current fiscal year, based on interagency review of IIASA's programs, particularly those related to global change. This review was generally positive, but not strongly supportive of IIASA's present global change-related activities, possibly as a result of the transition IIASA is now undertaking to become more active in this area. In addition, neither the overall budgets of the Federal agencies nor the budget for the U.S. Global Change Research Program for Fiscal Year 1991 had provided for funding support for IIASA.

The Foundation was able to reallocate its Fiscal Year 1991 research budget to provide IIASA with $1.1 million. As a result of extensive interagency effort and strong support from your staff, we expect to receive $580,000 from other Federal agencies which we will transfer to IIASA as soon as the funds are in hand. This will bring the overall U.S. contribution to IIASA for Calendar Year 1991 to $1.68 million. That funding level is commensurate with the U.S. review of the IIASA programs for the current year. In addition, support is provided for the U.S. Committee.

I hope you will find this status report satisfactory.

Sincerely,

Walter E. Massey
Director

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9122595
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: SALAM, Abdus: INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/09/91

SUBJECT: RESPONSE TO DR. BROMLEY'S LETTER OF 06/14/91 REGARDING THE INTERNATIONAL CENTRE FOR SCIENCE.

****

DIRECTORATE ASSIGNED: STAFF ASSIGNED:

ACTION REQUIRED: STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS:

OSTP RECEIVED: 07/23/91 FILE: P-INTERNATIONAL
DEPT RECEIVED:

2595

INTERNATIONAL ATOMIC ENERGY AGENCY
UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

RECEIVED

INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS
34100 TRIESTE (ITALY) - P.O.B. 586 - MIRAMARE - STRADA COSTIERA 11 - TELEPHONE: 2240-1
CABLE: CENTRATOM - TELEX 460392-1

91 JUL 23 A9:38

DIRECTOR
ABDUS SALAM

OFFICE OF THE DIRECTOR

9 July 1991

My dear Allan,

Thank you for your letter of 14 June which has clarified the issues. I wish to make it certain that you understand that there are Research and Development aspects of our endeavour with the International Centre for Science and its wing which will carry the burden of devoting itself to the environment.

For this purpose, we had hired Professor J. Shukla and Professor V. Keilis Borok to enhance the activities relating to research.

It is good to hear from your letter that IIASA may approach us for helping with African and other developing nations' needs for training for this purpsoe.

With my very best regards.

Yours sincerely,

Abdus Salam

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

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9123650
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: KIENLE, Paul: GSI

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/07/91

SUBJECT: A COPY OF THE BOOKLET HE PRODUCED ON THE DEDICATION OF THE SIS/ESR ACCELERATOR.

****

DIRECTORATE ASSIGNED:

STAFF ASSIGNED:

ACTION REQUIRED:

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY
PHYSICAL SCIENCES

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

OSTP RECEIVED: 07/17/91 FILE: P-INTERNATIONAL
DEPT RECEIVED:

THE WHITE HOUSE

WASHINGTON

July 24, 1991

Dear Paul:

Many thanks for sending me the copy of the booklet that you produced on the dedication of the SIS/ESR accelerator. I was delighted to get it with its excellent collection of photographs, many of them of old friends.

You can be justly proud of what you and your colleagues have accomplished in this new facility and I am confident that decades of exciting research lie head for you.

With warmest best wishes,

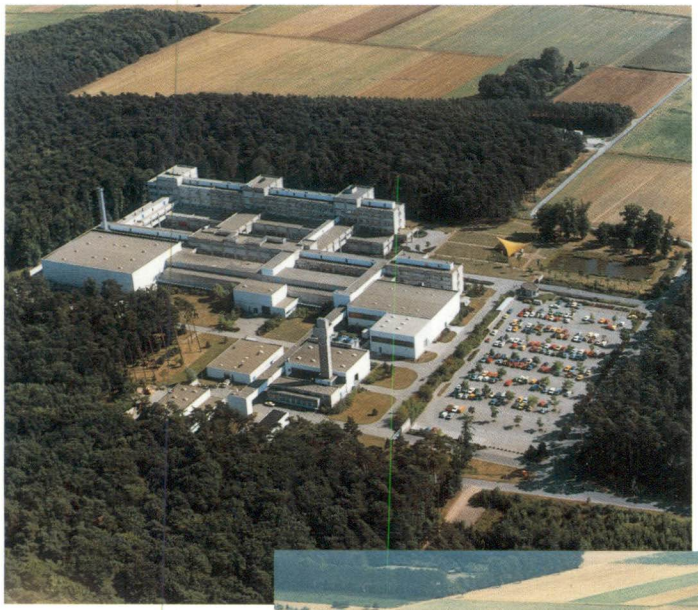
Sincerely yours,



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

Professor Doctor Paul Kienle
Director
GSI
Postfach 11 05 52
6100 Darmstadt
Germany

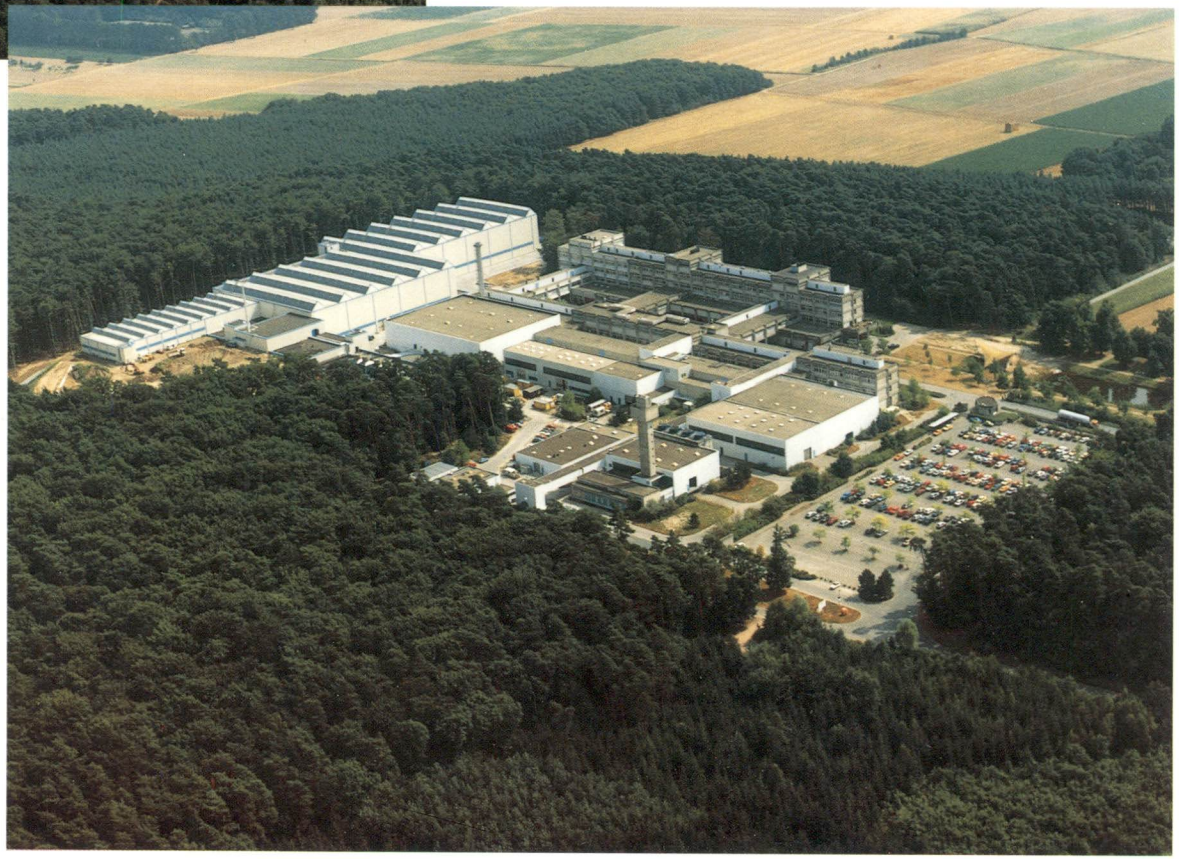
3650



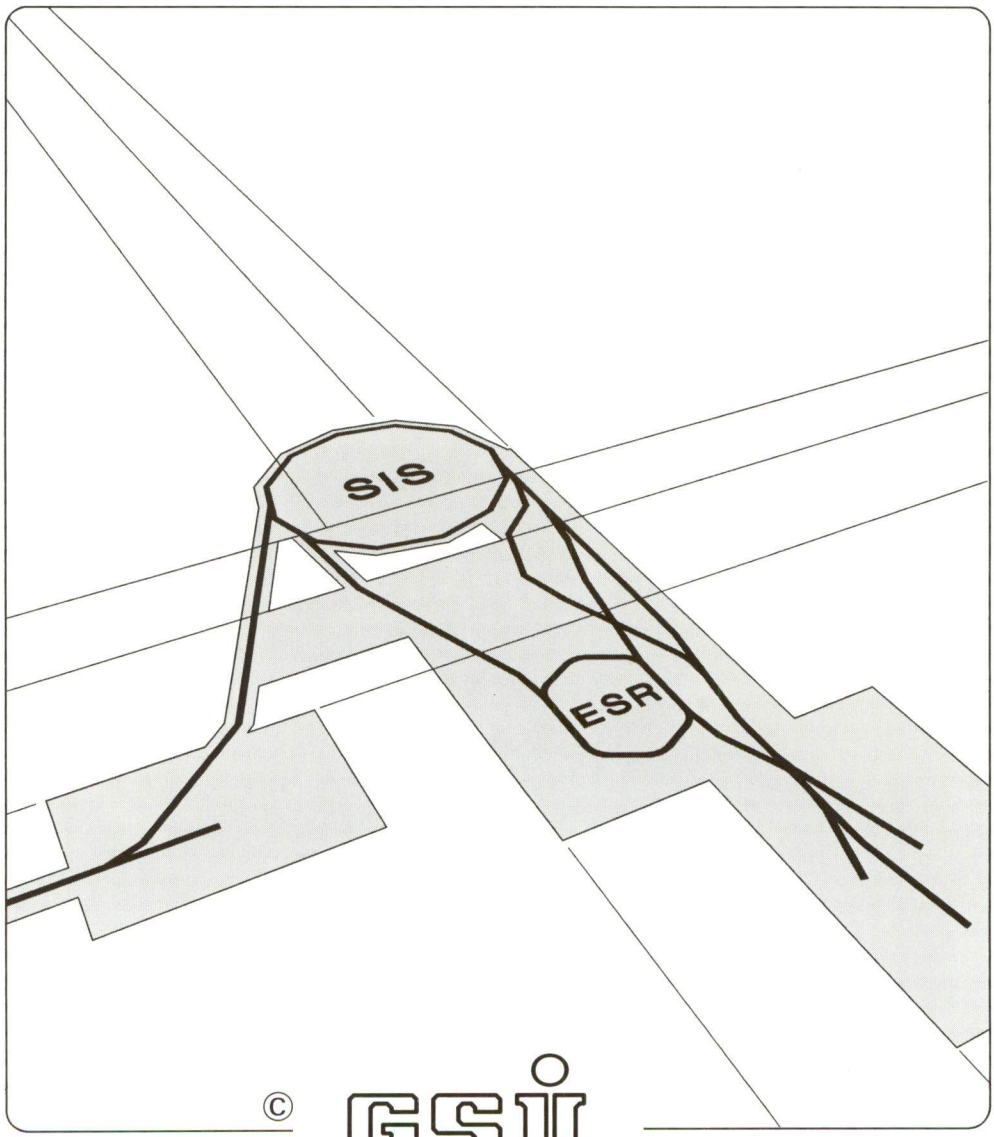
Die Übergabe der neuen Beschleunigeranlagen

SIS/ESR

an die Wissenschaft am 23. April 1990



GSI
Darmstadt


SIS
ESR
© GSI

Die Übergabe der neuen Beschleunigeranlagen

SIS/ESR

durch Herrn Bundesminister Dr. Heinz Riesenhuber an die Wissenschaft

am 23. April 1990

Begrüßung und Vorstellung des Projekts

Inhaltsverzeichnis

		Seite
Begrüßung und Vorstellung des Projekts	Professor Dr. Paul Kienle Wissenschaftlicher Geschäftsführer der GSI	4
Grußworte	Ministerialdirektor Dr. Josef Rembser Vorsitzender des Aufsichtsrats der GSI	22
	Professor Dr. Dirk Schwalm Vorsitzender des Wissenschaftlichen Rats der GSI	24
	Günther Metzger Oberbürgermeister der Stadt Darmstadt	26
	Dr. Wolfgang Gerhardt Minister für Wissenschaft und Kunst des Landes Hessen	28
Festvorträge	Professor Dr. Claude Detraz GANIL, Caen, Frankreich Chairman of NuPECC	30
	Dr. Heinz Riesenhuber Bundesminister für Forschung und Technologie	32
Glückwünsche		38
Fotodokumentation		48

Begrüßung und Vorstellung des Projekts



Professor Dr. Paul Kienle
Wissenschaftlicher
Geschäftsführer der GSI

Sehr geehrte Damen und Herren,

ich begrüße herzlich die vielen, die schon so früh am Wochenbeginn zu uns gefunden haben, zur Übergabe unserer neuen Beschleuniger an die Wissenschaft durch den Bundesminister für Forschung und Technologie, Herrn Dr. Heinz Riesenhuber, den ich mit einem herzlichen „Grüß Gott" willkommen heiße.
Ich begrüße vom Land Hessen den Stellvertreter des Ministerpräsidenten und Staatsminister für Wissenschaft und Kunst, Herrn Dr. Wolfgang Gerhardt, sowie die Vizepräsidentin des Landtags, Frau Ruth Wagner. Von der Stadt Darmstadt begrüße ich unseren Oberbürgermeister, Herrn Günther Metzger, und ganz besonders freue ich mich, daß Ihre Königliche Hoheit, Prinzessin Margaret von Hessen und bei Rhein, unsere Betonburg beehrt.
Ich begrüße die Abgeordneten des Europaparlaments, des Bundestags, des Landtags und der Stadtparlamente sowie die Mitarbeiter zahlreicher Bundes- und Landesministerien sowie Behörden. Ich heiße willkommen die Präsidenten und Vertreter der Wissenschaftsorganisationen und freue mich über die Anwesenheit zahlreicher Präsidenten und Rektoren von Hochschulen sowie von Vorständen und Direktoren der Forschungseinrichtungen und von Vertretern der Industrie. Ich begrüße die zahlreichen Wissenschaftler, unsere lieben GSI'ler sowie meine Freunde und alle, die mir nahestehen und mich auch heute nicht im Stich gelassen haben.
Am 22. April 1985, also fast auf den Tag genau vor fünf Jahren, erhielt ich von Ihnen, sehr geehrter Herr Minister Riesenhuber, diesen denkwürdigen Brief.
Darin stimmten Sie dem Ausbau der GSI mit einem Schwerionensynchrotron und einem damit verbundenen Experimentierspeicherring zu und legten die Rahmenbedingungen fest. Bund und Land Hessen stellten 275 Mio. DM Investitionsmittel zur Verfügung und 35 Neustellen für Bau und Betrieb der Beschleuniger sowie eine Verbesserung der Personalsituation für die Experimentinfrastruktur in Aussicht. Ein fast zehnjähriges Ringen um den Ausbau der GSI fand damit sein „Happy-End".
Ihre Hauptforderung, sehr geehrter Herr Riesenhuber, die Wissenschaft möge dem Projekt nachdrücklich zustimmen – Ihre eindringlichen Worte dazu klingen mir immer noch im Ohr –, konnte erfüllt werden. Über dieses Wunder war ich so glücklich, daß wir mit den vielen, die es bewirkten, allen voran mit diesem schönen

EINGEGANGEN 22. April 1985 We

Der Bundesminister
für Forschung und Technologie

5300 Bonn 2, den 17. April 1985

Heinemannstraße 2
Fernruf (0228) 591 oder 59-3010
Telex 885674 Kie

An den
Wissenschaftlich-technischen
Geschäftsführer der Gesellschaft
für Schwerionenforschung mbH
Herrn Professor Dr. Paul Kienle
Planck Straße 1

6100 Darmstadt

Sehr geehrter Herr Professor Kienle,

für Ihr Schreiben vom 12. Februar 1985 danke ich Ihnen.

Sie haben mit dem Vorschlag zum Bau des Schwerionensynchrotrons SIS und des sich anschließenden Experimentierspeicherringes ESR ein Ausbaukonzept vorgelegt, das von der Wissenschaft nachdrücklich unterstützt wird. Ich bin überzeugt, daß die GSI durch dieses Projekt auch in der Zukunft international beachtete wissenschaftliche Leistungen erbringen kann. Daher stimme ich dem Projekt zu. Soweit Ausgaben im Haushaltsplan 1985 gesperrt sind, werde ich die Freigabe beim Bundesminister der Finanzen beantragen.

Ich habe die Finanzierung des Projekts in der Finanzplanung des BMFT berücksichtigt. Dies hat außerordentlicher Anstrengung bedurft. Einschließlich der von der GSI zu erbringenden aktivierten Eigenleistungen habe ich für das Projekt über die bereits bisher bereitgestellen Zuwendungen hinaus folgende Mittel vorgesehen:

	1986	1987	1988	1989
Mio DM	34	56	72	70

Weitere 10 Mio DM sind für 1990 geplant.

Ernste Sorgen bereiten mir die von Ihnen beantragten 88 neue Stellen. Sie melden 35 Neustellen für Bau und Betrieb der SIS/ESR-Anlage und weitere 35 Stellen für das Experimentierprogramm an. Darüber hinaus beantragen Sie einen teilweisen Ausgleich für die Stellenreduktion in Folge der "7,5 %-Aktion", die sich auf 18 Stellen auf der Basis 1984 beläuft.

Obwohl die GSI den Bedarf von 53 Neustellen für Bau und Betrieb schlüssig dargelegt hat, kann der BMFT neben den bewilligten 12 Neustellen, die im Jahre 1985 bereits zur Verfügung stehen, nur weitere 35 Stellen in Aussicht stellen. Darüber hinausgehende Zusagen sind mir angesichts der notwendigen Restriktionen in der institutionellen Förderung leider nicht möglich. Das bedeutet nicht, daß noch weitere Überlegungen angestellt werden können und sollten, wie insbesondere die personelle Verstärkung für die Durchführung des Experimentierprogramms erfolgen kann. Daher wird rechtzeitig vor der Experimentierphase 1989/90 erneut zu prüfen sein, wie die Personalsituation verbessert werden kann. Hierbei muß auch die internationale Beteiligung berücksichtigt werden. Begrüssen würde ich es, wenn auch die Industrie zu einem Beitrag gewonnen werden könnte. Ich setze bei meiner Zustimmung zu dem Projekt voraus, daß Sie das Projekt auf dieser Grundlage beginnen und durchführen können.
Frau Kollegin Dr. Rüdiger habe ich eine Durchschrift dieses Schreibens für den Gesellschafter Land Hessen zugesandt.

Mit freundlichen Grüßen

Dr. Heinz Riesenhuber



Paar, Vera Rüdiger und Heinz Riesenhuber, am 6. Mai 1985 gleich mal ordentlich schon vor der Arbeit feierten. Ich möchte mich bei Ihnen, Herr Minister Riesenhuber und Herr Minister Gerhardt, nochmals herzlich bedanken, besonders aber auch bei denen, die subtil die Fäden spannen, den Karren in die rechten Bahnen lenkten, bergab bremsten, bergauf kräftig schoben, uns mit Rat und Tat zur Seite standen, sich aber bescheiden und geschickt im Hintergrund hielten. Allen voran bei unserem damaligen Aufsichtsratsvorsitzenden Dr. Borst, seinem Stellvertreter, Herrn Köhn, und dem Vorsitzenden des Wissenschaftlichen Rats, Professor Otten.

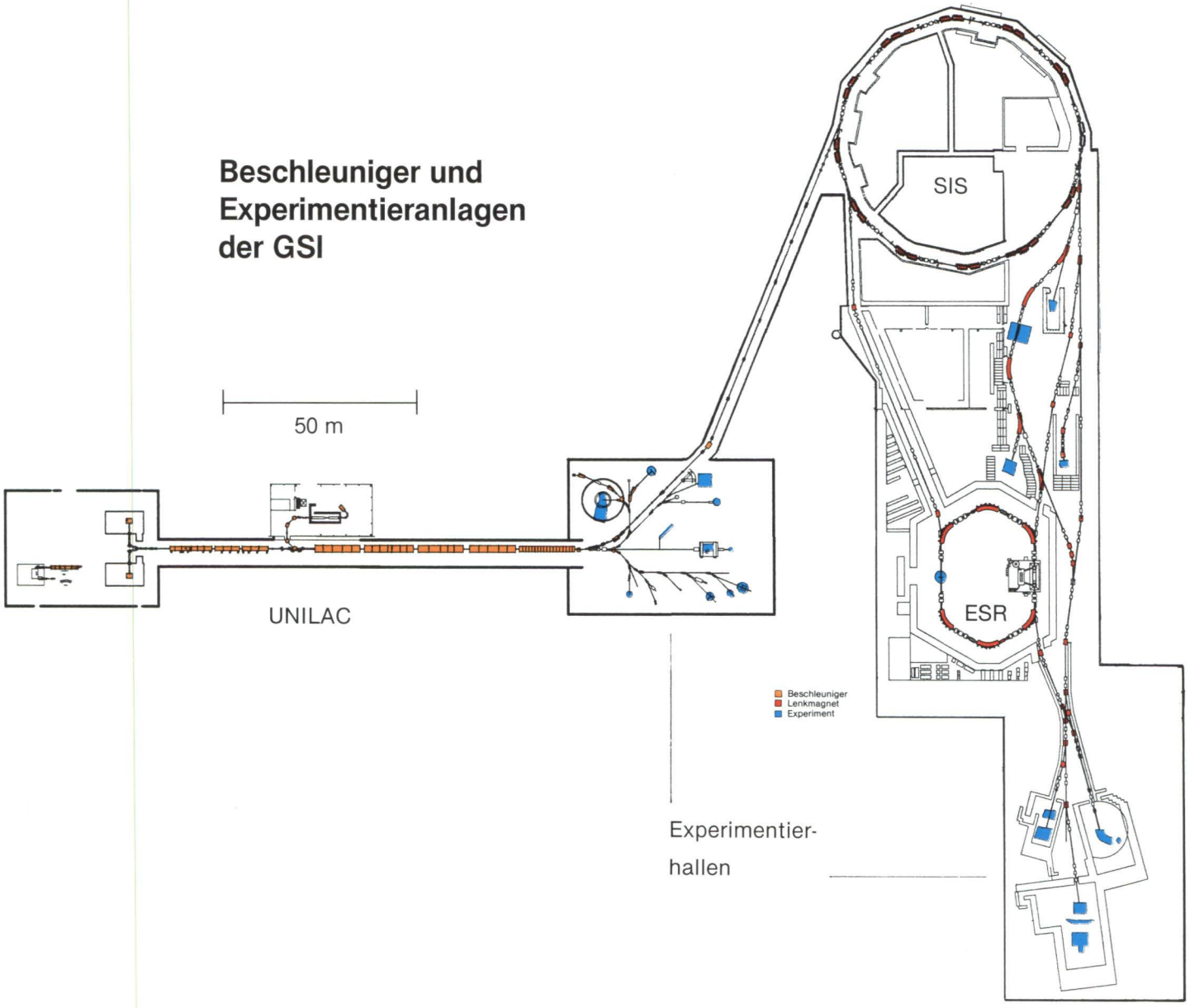
Und nun einige Worte zum Projekt: Es war die aufeinander abgestimmte Verbindung eines Synchrotrons zur



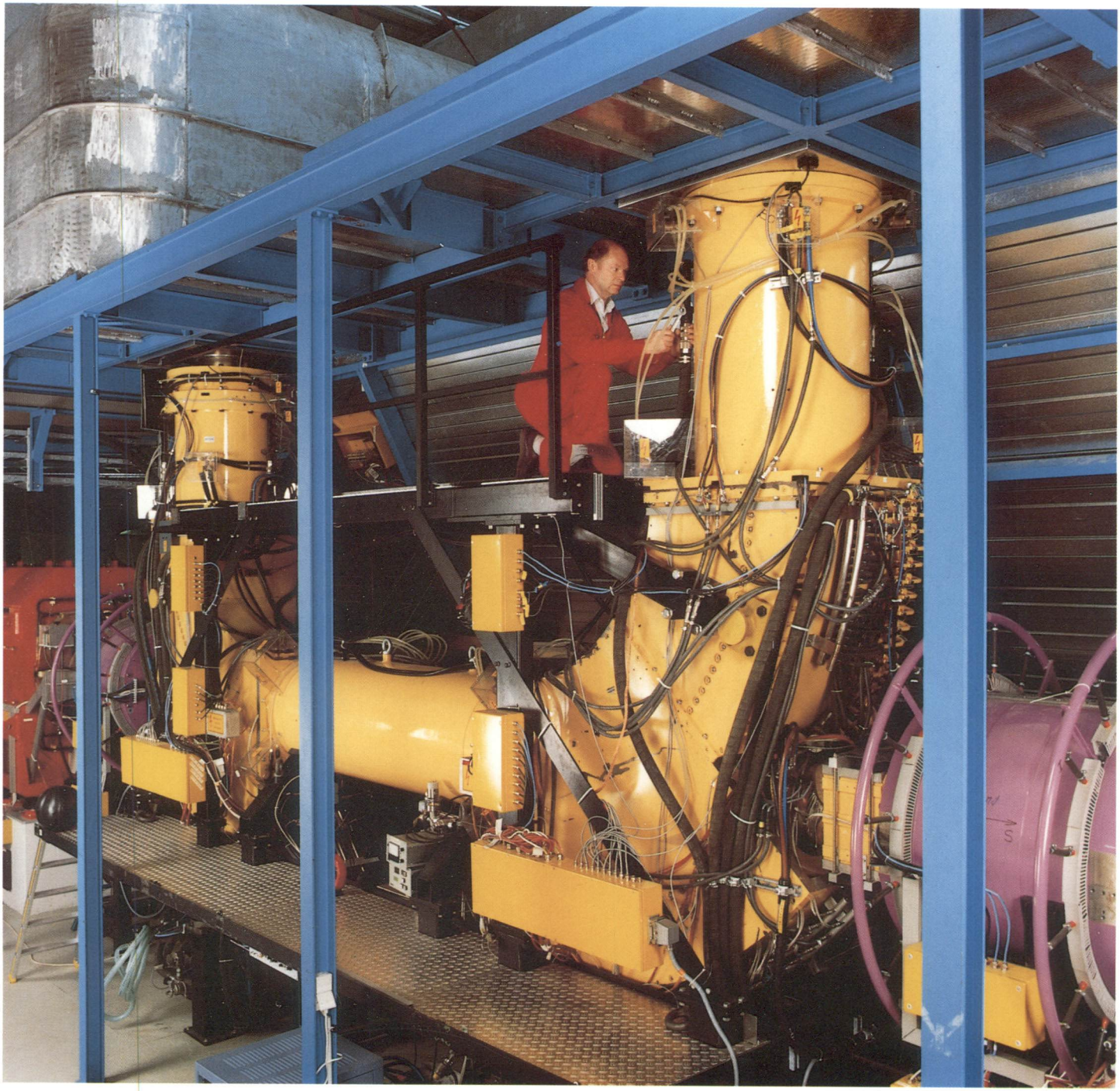
Beschleunigung aller Elemente bis Uran mit einem Speicherring zum Sammeln und Kühlen vollständig ionisierter Kerne und Kernfragmente, die von der internationalen Nutzergemeinde mit Begeisterung aufgenommen wurde, da damit weltweit einmalige Experimentiermöglichkeiten geschaffen werden.
Der UNILAC, ausgerüstet mit zwei Ionenquellen und von Puls zu Puls in seinem Beschleunigungsmodus umtastbar, wird als Injektor für SIS und fast völlig entkoppelt wie bisher für Experimente bis 20 MeV pro Kernbaustein benutzt. Das Synchrotron mit einem Umfang von 216 m kann mit einer Taktfrequenz von 1 – 3 Hz Strahlen aus dem UNILAC bis zu 30 Umläufe speichern und auf eine bis zur Maximalenergie von 1 – 2 GeV pro Kernbaustein



Beschleuniger und Experimentieranlagen der GSI



beliebig von Zyklus zu Zyklus wählbare Endenergie beschleunigen.
Der Strahl kann „schnell", also während eines Umlaufs, oder „langsam", über einige Umläufe, extrahiert werden. Die schnelle Extraktion dient zum Transfer des Strahls in den Speicherring, die langsame Extraktion für „fixed target"-Experimente. Das Biegevermögen von SIS wurde mit 18 Tesla-Metern so gewählt, daß ein Uranstrahl beim Durchgang durch eine dünne Folie mit großer Wahrscheinlichkeit alle verbliebenen Elektronen verliert und nur „nackte" Uranionen im Strahl bleiben.
Was sind die Reize von Strahlen nackter Kerne? Zum einen kann so am effektivsten weiterbeschleunigt oder gespeichert werden, zum anderen wird die Kühlung mit Elektronen am wirkungsvollsten, und die Verluste durch Ladungswechsel werden minimal. Auf dem Weg zu noch höheren Energien ist SIS 18 die optimale Zwischenstufe. Die SIS-Strahlen sind aber schwach und besitzen eine niedrige Phasenraumdichte, d. h. die Anzahl der Uranionen pro Sekunde, Impulsintervall und Volumenelement ist niedrig.
Was kann man dagegen tun? Nach Liouville geht gar nichts in einem abgeschlossenen System mit konservativen Kräften. Budker und van der Meer fanden aber, daß die Phasenraumdichten von Protonen und Antiprotonen in Speicherringen durch Kühlverfahren wesentlich erhöht werden können. Unser Ziel war, diese Verfahren auf nackte Uranstrahlen zu übertragen. Dazu benötigen wir noch einen mit dem SIS verbundenen Speicherring ESR, in dem die schwachen Strahlen gesammelt, gespeichert und mit allen anwendbaren Kühltechniken zu den höchsten Phasenraumdichten komprimiert werden. Eines dieser Verfahren ist die Budkersche Elektronenkühlung: Die „warmen" Ionenstrahlen werden in einer geraden Sektion des Rings zwei Meter durch einen „kalten" Elektronenstrahl geführt, dessen Geschwindigkeit sehr gut definiert ist und der Sollgeschwindigkeit des Ionenstrahls entspricht. Durch Streuung wird der Geschwindigkeitsunterschied der Ionen und Elektronen ausgeglichen, also beide in Gleichschritt gebracht. Während der Elektronenstrahl kalt nachgefüttert wird, läuft der Ionenstrahl immer wieder durch das Kühlmedium, bis er die Temperatur des Elektronenstrahls erreicht hat.
Kühlexperimente an einem Testspeicherring des MPI für Kernphysik in Heidelberg zeigten, daß die Phasenraumdichte von Strahlen leichter Ionen mit dieser Methode um einen Faktor 10 000 erhöht werden kann. Die Kühlkraft steigt mit dem Verhältnis des Quadrats der Protonenzahl zur Zahl der Nukleonen und ist damit für nacktes Uran maximal.
Die höchstmögliche Strahldichte wird erreicht, wenn die Ionen so tief gekühlt sind, daß sie kondensieren oder gar kristallisieren. Dieses Phänomen konnte kürzlich mit Laserkühlung in Ionenfallen beobachtet werden.
Bei streifenden Kern-Kern-Stößen können auch Sekundärstrahlen hergestellt werden, deren Kerne außergewöhnliche Verhältnisse von Protonen- zu Neutronenzahl haben. Danach können diese exotischen Kerne mit einem Fragmentseparator, der SIS und ESR verbindet, abgetrennt und im ESR aufgesammelt und gekühlt werden; dies ist einmalig.
Die gekühlten, im ESR umlaufenden Strahlen kann man aufgrund ihrer hohen Stromstärke in einem internen Gasjettarget für Untersuchungen seltener Reaktionen nutzen.
Sie können langsam in die Targethalle extrahiert und für Experimente, die beste Strahlqualität erfordern, zur Verfügung gestellt werden. Man kann sie aber auch wieder in das SIS einschießen und zu höchsten Energien weiterbeschleunigen. Dies eröffnet eine interessante Zukunftsperspektive für die GSI.
Die einzige ökonomische Lösung zur Erzeugung höchster Energiedichten mit Kern-Kern-Stößen besteht darin, in einem Doppelspeicherring mit supraleitenden Magneten zwei Strahlen in Kreuzungszonen fast frontal aufeinanderzuschießen.
Unsere gekühlten Strahlen bieten in Collider-Ringen eine Reihe von Vorteilen: Die Apertur der Magnete kann klein bleiben, was hohe Felder erlaubt und zu niedrigen Kosten führt. Die Kollisionsraten werden sehr hoch, da die Zahl der Ionen maximal und die Emittanzen minimal sind.



Anhand einiger Bilder möchte ich nun den Projektablauf skizzieren:

Die Jahre 1985 und 1986 waren ausgefüllt mit der Projektplanung und verschiedenen Genehmigungsverfahren. Bürgernah tagte am 24. April 1985 der Magistrat der Stadt Darmstadt bei uns, um unser Anliegen und unser Projekt an Ort und Stelle kennenzulernen.
Ich möchte den zuständigen Bundes- und Landesministerien, allen voran aber der Stadt Darmstadt mit ihrem Oberbürgermeister, für die ihr Verständnis bei der Ge-



nehmigung unserer Projektanträge und insbesondere für die Bereitstellung eines Geländes für die Wiederaufforstung danken.
Am 27. Januar 1987, also vor knapp drei Jahren, wurde dieses furchterregende Bild der Baustelle aufgenommen. Planung und Abwicklung des gewaltigen Bauvorhabens hatte die Energieconsulting Heidelberg übernommen und in vorbildlicher Weise durchgeführt.



Am 30. März 1987 eröffnete Herr Minister Riesenhuber einen Workshop über erste Experimente am SIS/ESR. Über 100 Experimentvorschläge waren eingegangen, wobei mehr als die Hälfte der beteiligten Wissenschaftler aus dem Ausland kam. Wir standen vor dem riesigen Problem, einerseits die Begeisterung zu erhalten, andererseits drastische Einschränkungen vornehmen zu müssen, sonst wären die Maschinen für 5 Jahre ausgebucht gewesen. Es galt zu entscheiden, welche Experimentiereinrichtungen als erstes gebaut werden sollten. Dabei beriet uns ein internationales „Program Advisory Committee" (PAC) unter Vorsitz von Professor Otten. Das ausgewählte Experimentspektrum war breit gefächert, sollte aber an wenigen, vielseitig nutzbaren Experimentiereinrichtungen durchgeführt werden. Herrn Otten und allen Mitgliedern des PAC möchte ich für die schwierige Arbeit herzlich danken und die Experimentatoren um Verständnis für diese Entscheidungen bitten.





Im April 1988, also schon knapp eineinhalb Jahre nach Baubeginn, wurden die SIS-Magnete montiert.

Noch im gleichen Jahr, am 22. November, lenkte Herr Schmelzer zu seinem 80. Geburtstag den Strahl seines UNILAC in das SIS ein.

Am 30. Oktober 1989 wurde erstmals ein Uran-Strahl auf die Maximalenergie von 1 GeV pro Kernbaustein beschleunigt.

Im Dezember 1989 wurde langsam extrahiert und zu Beginn dieses Jahres mit dem Experimentierbetrieb am Fragmentseparator begonnen.

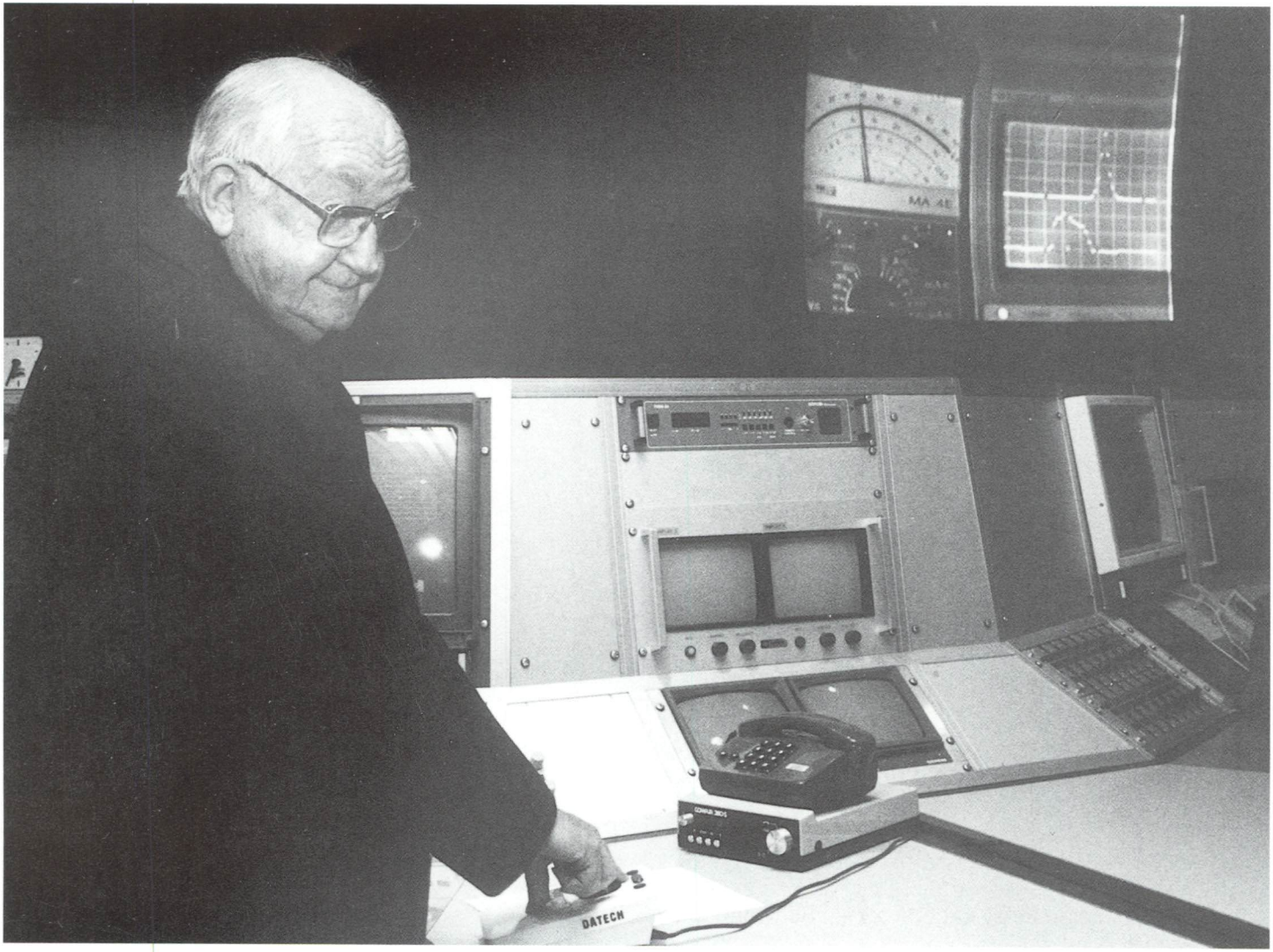
Der ESR wurde, etwa ein halbes Jahr zeitverschoben, parallel zum SIS aufgebaut. Im Januar 1990 wurden die Vakuumkammern in die Magnete eingeschoben, im Februar war der Ring fertig montiert.

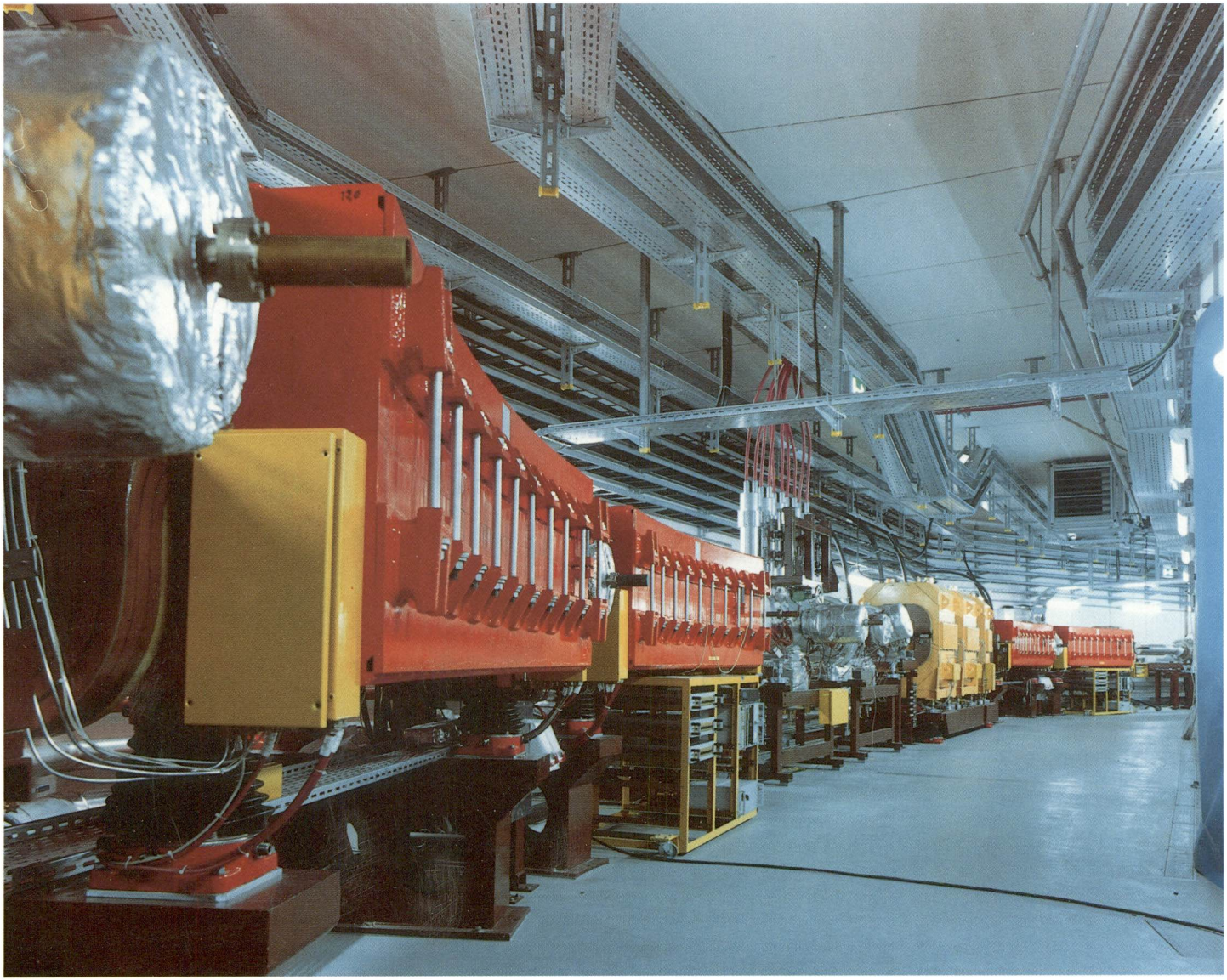
Am 4. April wurden 200 MeV pro Nukleon Argon^{18+} für fünf Stunden gespeichert. Die Zahl der Umläufe war dabei sechsmal höher als die der Erde um die Sonne in 4 Milliarden Jahren – ein großes Erfolgserlebnis für uns alle. In der letzten Woche wurde mit den Kühlexperimenten begonnen.

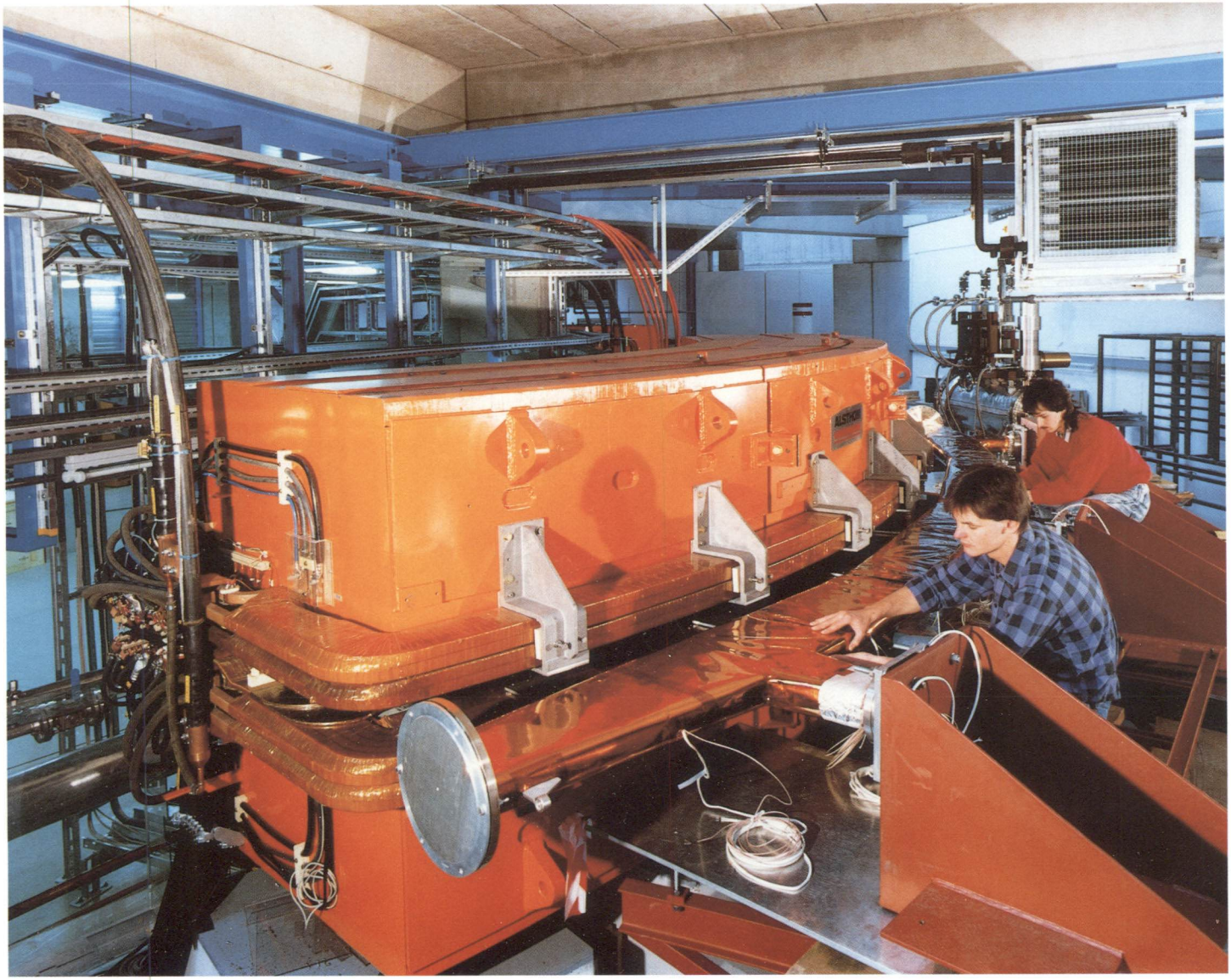
Das Beschleuniger-Ausbauprogramm der GSI wurde von einer 110 Mann starken Projektgruppe unter der Leitung von Herrn Dr. Böhne abgewickelt.

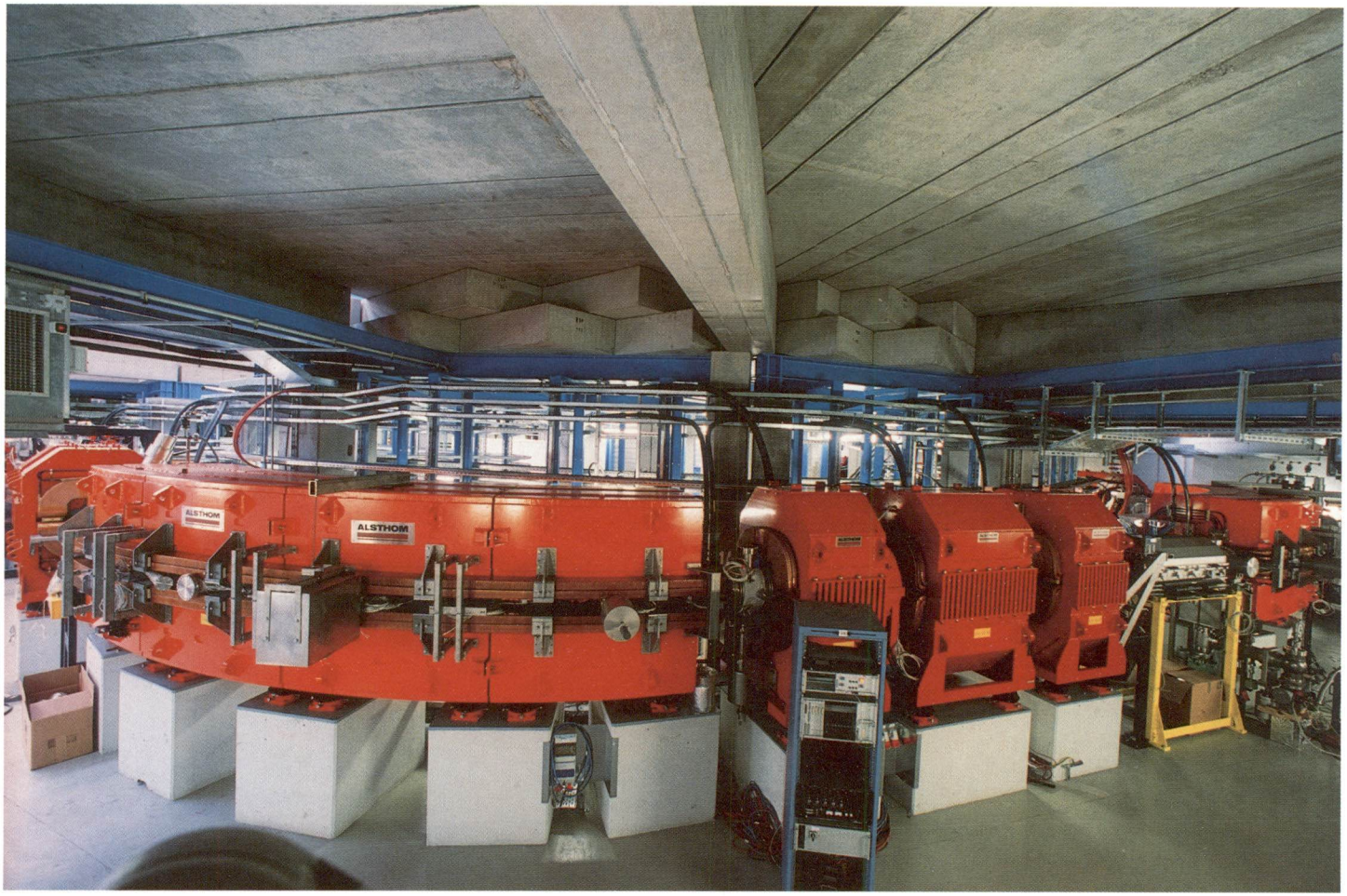
Besonders erfreulich war, daß die Industrie bereit war, technologisch schwierige, neuartige und risikoreiche Komponentenfertigung zu übernehmen. Abgesehen von Prototypen der Spezialkomponenten wurde alles von der Industrie hergestellt. Die Werkstätten der GSI wurden hauptsächlich für notwendige Änderungen, Nacharbeiten und Spezialaufträge eingesetzt.
Unser Konstruktionsbüro wurde durch externe Büros unterstützt. An der Montage der Beschleunigeranlagen waren neben der eigenen Montagegruppe viele Fremdfirmen beteiligt. Die Belastung des GSI-Personals war sehr hoch, da während der Bauphase zusätzlich der UNILAC für Forschungsarbeiten weiterbetrieben und zusammen mit dem Lawrence Berkeley Laboratory ein Schwerioneninjektor für CERN aufgebaut wurde.

Ich möchte allen Beteiligten herzlich danken.
Zur Darstellung der Beiträge der Industrie und deren Leistungsfähigkeit haben wir eine Auswahl von Firmen zu einer Ausstellung eingeladen, deren Besuch ich sehr empfehlen möchte.
Zusammen mit den Ausstellern und vielen anderen Firmen hat die GSI ein technisch kompliziertes Projekt **in dem vorgegebenen Kostenrahmen** und auch **innerhalb des sehr knappen Zeitplans** durchführen können. Wir danken unseren Geldgebern für das entgegengebrachte Vertrauen und hoffen, dies auch in Zukunft zu erfüllen.


MA 4E
DATECH






ALSTHOM
ALSTHOM

Aus Zeitgründen kann ich leider nicht auf das erste Experimentierprogramm eingehen, in das wir große Hoffnungen setzen. Herr Henning wird es heute nachmittag erläutern.

Hier nur einige Schlagworte:

- Mittels Projektilfragmentierung und Studium von Kernreaktionen mit gekühlten radioaktiven Strahlen kann die Struktur von Kernen weitab vom Stabilitätstal erstmals mit ganz neuen Methoden untersucht werden.
- Verdichtete, erhitzte und in seinen Konstituenten, den Nukleonen, angeregte Kernmaterie kann in zentralen Kern-Kern-Stößen erzeugt werden.
  Durch Studium der während des Verdichtungsstoßes herausgeschleuderten Nukleonen und Fragmente sowie der dabei erzeugten Photonen, Mesonen und Antiteilchen hofft man, Informationen über die Zustandsgleichung von Kernmaterie bei Energiedichten zu finden, bei denen die Nukleonen nicht mehr im Grundzustand, sondern mit hoher Wahrscheinlichkeit in die Δ-Resonanz angeregt sind. Ähnlich verdichtete Materie kommt in Supernova-Explosionen von Sternen vor.
- Die hochionisierten Strahlen des ESR können zu fundamentalen Studien der Quantenelektrodynamik hoher Felder sowie zur Gewinnung praktisch interessanter spektroskopischer Daten und Reaktionsquerschnitte für heiße Plasmen, wie sie in Sternen auftreten, verwendet werden.
- Für die anwendungsorientierte Forschung werden zwei große Experimentiereinrichtungen aufgebaut.
  Die eine dient zur Entwicklung eines neuen Bestrahlungsverfahrens zur Therapie kompakter Tumore mit Hochenergie-Schwerionenstrahlen, die eine wohldefinierte Reichweite besitzen und am Spurende die maximale Dosis im Gewebe deponieren. Die andere dient zur Erzeugung eines Plasmas mit hoher Temperatur und hohem Druck durch Beschuß von Festkörpern mit Schwerionenstrahlen bisher nicht erreichter Leistungsdichte. Dies sind grundlegende Studien zur Trägheitsfusion.

Lassen Sie mich zum Abschluß noch eine Bemerkung zur Zusammenarbeit mit in- und ausländischen Universitäten und Forschungseinrichtungen machen.

Das erste Experimentierprogramm wird von Forschergruppen aus 19 deutschen Universitäten und aus 11 weiteren Ländern getragen. Alle großen Experimente wurden in enger Zusammenarbeit mit Gruppen von in- und ausländischen Hochschulen aufgebaut. Viele Komponenten wurden in Universitätslaboratorien entwickelt und hier eingebaut.

Neben dem großen personellen Einsatz vor Ort und bei der GSI haben Institute aus Frankreich, der UdSSR, den Niederlanden, Italien und anderen Ländern beträchtliche Investitionsmittel für den Bau der Detektoren aufgebracht. Viele dieser gemeinsamen Projekte sind durch langfristige Kooperationsabkommen abgesichert.

Für unsere Hochschulen erschließen die neuen Experimentieranlagen einmalige Möglichkeiten, ihre Studenten mit Spitzenforschung auszubilden. Mit einigen Hochschulen haben wir zusätzlich Kooperationsverträge für Forschungs- und Entwicklungsarbeiten sowie für die Betreuung von Experimentiereinrichtungen abgeschlossen. Unsere neuen Anlagen öffnen der Kernphysik ein weites Tor zu einer intensiven europäischen Kollaboration, die das gesamte intellektuelle Potential unserer Länder für die besten Experimente ausnützt.

Meiner Meinung nach hat die GSI mit dem Bau von SIS und ESR langfristige Perspektiven; erstens durch die intensive Nutzung der jetzt geschaffenen Forschungsmöglichkeiten und zweitens durch ideale Voraussetzungen zum Bau des besten Schwerionencolliders für Europa. Aber diese einmaligen Chancen müssen auch genutzt werden; denn wie sagte doch Gorbatschow: „Wer zu spät kommt, den bestraft das Leben."

Grußworte



Ministerialdirektor
Dr. Josef Rembser
Vorsitzender des
Aufsichtsrats der GSI

Geehrte Königliche Hoheit Prinzessin Margaret, Herr Minister Riesenhuber, Herr Staatsminister Gerhardt, Herr Oberbürgermeister, geehrte Festgäste aus dem In- und Ausland, lieber Herr Professor Kienle!

Im Namen des Aufsichtsrats der GSI möchte ich Sie am Beginn unserer Festveranstaltung herzlich begrüßen. Im Aufsichtsrat sind für die GSI verantwortliche Mitarbeiter der Gesellschafter der GSI, des Landes Hessen und der Bundesregierung, sowie der Vorsitzende des externen wissenschaftlichen Beratungsgremiums der GSI, des Wissenschaftlichen Rats, vertreten. Ihnen, Herr Professor Schwalm, gilt in dieser Eigenschaft als Vorsitzender des Wissenschaftlichen Rats und als Dank für die kontinuierliche Arbeit Ihres Ausschusses eine besondere Erwähnung.
Der Aufsichtsrat überwacht Arbeit und Geschäfte der GSI, vor allem bei den Finanzen, der Personalwirtschaft, der Organisation und dem Management. Er hat wichtige Entscheidungen zu treffen, die Aufgaben und Leistungen der Gesellschaft betreffen.
Der Aufsichtsrat freut sich heute mit Ihnen, Herr Professor Kienle und Herr Schuff, mit allen Ihren Mitarbeiterinnen und Mitarbeitern über den Abschluß der Planungs- und Errichtungsphase für die zweite Generation der GSI-Beschleunigeranlage. Es sind gleich **zwei** neue Anlagen: eine für die Beschleunigung schwerer Ionen auf hohe Energien, das **S**chwer**i**onen-**S**ynchrotron SIS, und eine zweite, der **E**xperimentier-**S**peicher**r**ing ESR, für ihre Speicherung und für Experimente mit hoher Teilchendichte.
Auch für die zahlreichen künftigen Nutzer von SIS und ESR aus zahlreichen Hochschulen des In- und Auslandes ist dies ein besonderer Tag.
Wie begehrt SIS und ESR für Experimentalphysiker künftig sein werden, zeigte mir kürzlich beispielhaft ein Gespräch mit einem US-Humboldt-Stipendiaten. Er möchte seinen „Humboldt-Award" in Abschnitten, in Stipendien-Quanten gleichsam, in Darmstadt „verbrauchen", um möglichst viele Jahre die für lange Zeit einzigartigen und konkurrenzlosen GSI-Anlagen zu nutzen.
SIS und ESR wurden vom Aufsichtsrat in den Jahren 1984 und 1985 unter meinem Vorgänger Dr. Walter Borst auf den Weg gebracht. Ich möchte hier dankbar seinen

Einsatz für die GSI ebenso wie den des führenden hessischen Aufsichtsratsmitglieds Joachim Köhn erwähnen. Wenn vorrangig ein Name mit dem Aufbau der ersten Experimentierphase und den Grundlagen der GSI verbunden ist, so ist es der von Prof. Christoph Schmelzer. Er verfolgt heute wach und rüstig die Geschicke der GSI aus seinem Alterssitz an der Bergstraße, gibt ihr weiterhin seinen Rat, und ich möchte ihn hier gerne in dieser Festversammlung besonders herzlich begrüßen.
Auch Herrn Prof. Gisbert zu Putlitz, Direktor des GSI-Laboratoriums in der ersten „Nach-Schmelzer-Phase", gilt mein besonderer Gruß.
Die GSI steht mit den neuen Anlagen SIS/ESR am Beginn ihres zweiten Arbeitsabschnitts. Wie bisher liegen drei Aufgaben vor ihr:

- Spitzenforschung zu betreiben,
- wissenschaftlichen Nachwuchs durch Forschung auszubilden,
- Wirkungsort europäischer und internationaler Zusammenarbeit in der Wissenschaft zu sein.

Im Namen des Aufsichtsrats möchte ich allen, die mit der GSI verbunden waren und sind, dabei vor allem den Mitarbeiterinnen und Mitarbeitern der GSI, Dank für Arbeit und Einsatz aussprechen.
SIS/ESR und ihre ersten Experimentiereinrichtungen sind mit großem Einsatz und mit vielen Überstunden gebaut und auf den Betrieb vorbereitet worden. Gerne hätte der Aufsichtsrat der GSI zusätzlich noch zwei, drei Dutzend Planstellen mehr in den jährlichen Wirtschaftsplänen zugewiesen. Aber hier stoßen auch Aufsichtsräte öffentlicher Forschungsunternehmen an die Grenzen, die Haushaltsvorgaben von Kabinetten und Parlamenten setzen.
Lieber Herr Professor Kienle, liebe Mitarbeiterinnen und Mitarbeiter und Nutzer der GSI, der Aufsichtsrat wünscht Ihnen für den jetzt beginnenden zweiten Lebens- und Wirkungsabschnitt die bisherige Kontinuität in der Begeisterung, den Erfolg der zurückliegenden Jahre und die bleibende Anerkennung der Wissenschaft.
Vielen Dank.





Professor Dr. Dirk Schwalm
Vorsitzender des Wissenschaftlichen Rats der GSI

Sehr geehrter Herr Bundesminister, sehr geehrter Herr Staatsminister, sehr geehrter Herr Oberbürgermeister, liebe Gäste und nicht zuletzt und ganz besonders herzlich: Liebe Mitarbeiterinnen und Mitarbeiter der GSI – dies ist in erster Linie **Ihr** Tag. Denn, daß wir die erfolgreiche Inbetriebnahme des Schwerionensynchrotrons SIS und des Experimentier-Speicherrings ESR heute und damit zu einem Zeitpunkt feiern können, der bereits im Sommer 1985, kurz nach der Bewilligung dieses Projekts, dafür vorgesehen war – daß wir heute die Aufnahme des Experimentierbetriebs an dieser weltweit einzigartigen Beschleunigeranlage feiern können, das ist allen voran Ihr Verdienst, und dafür gebührt Ihnen, liebe GSI'ler, unser Dank und Respekt. Diese Leistung ist um so bewundernswerter, als die Entwicklung und der Bau dieser technisch höchst anspruchsvollen Anlage innerhalb eines nur bescheiden angehobenen Personalrahmens geschehen mußte, was Ihnen allen Überdurchschnittliches abverlangte, um die gesteckten Ziele zu erreichen.

Dies ist aber auch Ihr Tag, lieber Herr Kienle. Sie haben aus dem goldenen Ring „SIS" durch das Einsetzen der selbst gezüchteten Perle „ESR" erst ein wirkliches Schmuckstück gemacht und damit nicht nur das – schon in Ihrer Begrüßung angesprochene – „schöne Paar" begeistert. Sie haben damit und mit Ihrem wissenschaftlichen Ideenreichtum viele Zauderer davon überzeugt, daß dies der richtige Weg ist, den die Schwerionenforschung gehen sollte, daß dies der Weg ist, der viele aufregend neue Möglichkeiten erschließt und zukünftige Entwicklungen vorbereitet.

Sie erzählten mir einmal, daß der Herr Bundesminister in einem Ihrer ersten Gespräche zu Ihnen sagte – bitte entschuldigen Sie meine grobe Verkürzung – „Sie dürfen alles bauen, auf das Sie die Schwerionengemeinde einschwören können." Daß Ihnen das gelungen ist, Herr Kienle, zeigt eindrucksvoll, daß selbst diese riesige Halle nicht auszureichen scheint, die über 500 Wissenschaftler aus dem In- und Ausland zu fassen, die zu dieser Einweihung gekommen sind. Denn es ist sicherlich nicht das kalte Buffet, was uns hierher gezogen hat: Vielmehr ist dies auch der langersehnte Tag, auf den sich viele von uns zusammen mit Ihnen, den Mitarbeitern der GSI, seit Jahren konsequent vorbereitet haben, sei es durch die Erarbeitung des wissenschaftlichen Programms, sei es durch die Konzeption und den Aufbau

der Experimente am ESR und am SIS, oder sei es durch vorbereitende Experimente an anderen Beschleunigern oder Speicherringen.
Die Gründungskonzeption der GSI ist, die instrumentelle Voraussetzung für Grundlagenforschung mit schnellen schweren Ionen zu schaffen und diese **gemeinsam** mit den Wissenschaftlern aus den Hochschulen und anderen Forschungseinrichtungen zu betreiben.
Diese enge Symbiose von Hochschulen und Großforschungseinrichtung hat sich in den vergangenen Jahren hervorragend bewährt; ich bin überzeugt, daß sie auch weiterhin die beste Gewähr dafür ist, daß mit dem heutigen offiziellen Beginn der Experimentierphase an dieser einzigartigen Beschleunigeranlage auch der Startschuß für eine aufregende Zeit wissenschaftlicher Entdeckungen und Erfolge gegeben wird.
Aber ein solch enges Zusammenleben will natürlich auch gepflegt sein. Dazu gehört nicht nur die finanzielle Unterstützung – hier verfügen wir mit dem Verbundforschungsprogramm des BMFT und dem Hochschulprogramm der GSI über geeignete Verfahren und Mittel – sondern dazu gehört ebenfalls, daß die GSI auch personell in die Lage versetzt wird, ihren Verpflichtungen nachzukommen, die ihr aufgrund des enorm erweiterten Instrumentariums und der zunehmenden Konzentration der Kern- und Schwerionenphysik auf die GSI und ihre Beschleuniger entstehen. Und wenn dieses Zusammenleben Zukunft haben soll, dann muß auch das Umfeld an den Hochschulen intakt bleiben, dann müssen unsere Heimatlabors attraktiv genug bleiben, um unsere Studenten an diese Forschung heranführen und dafür begeistern zu können.
Denn es ist doch nicht zuletzt die Begeisterungsfähigkeit, die Einsatzbereitschaft, der Elan unserer jungen Mitarbeiter, die es uns möglich machen, Spitzenforschung zu betreiben.
Als Sprecher der hier versammelten Wissenschaftler möchte ich Sie, Herr Bundesminister Riesenhuber, und Sie, Herr Staatsminister Gerhardt, bitten, unseren Dank an die Bundesrepublik Deutschland und an das Land Hessen für die Bereitstellung der finanziellen Mittel entgegenzunehmen, die die Erstellung dessen, was wir heute hier einweihen, erst möglich gemacht haben. Die GSI bitte ich, unseren Dank für diese großartige Aufbauleistung entgegenzunehmen. Uns allen wünsche ich, daß sich hinter diesen dicken Betonmauern viele aufregende Überraschungen verbergen.





Günther Metzger
Oberbürgermeister
der Stadt Darmstadt

Sehr geehrter lieber Herr Prof. Dr. Kienle, geehrte liebe Mitarbeiterinnen und Mitarbeiter der GSI, meine Herren Minister, meine Damen und Herren Abgeordneten, liebe Festgäste, im Namen der Stadt Darmstadt überbringe ich die Glückwünsche zu dieser neuen Forschungs- und Experimentieranlage.

Wir freuen uns, daß nach einer verhältnismäßig kurzen Bauzeit diese Anlage heute eingeweiht und in Benutzung genommen werden kann. Wenn ich sage *wir,* dann spreche ich für die Darmstädter Bevölkerung, die mit großer Aufmerksamkeit – zeitweise auch mit Mißtrauen – das beobachtet hat, was sich in den letzten Jahren hier abspielte. Und wenn ich einen Stadtteil, nämlich Wixhausen, und die Bevölkerung dieses Stadtteils in besonderer Weise nenne, dann deshalb, weil hier die Besorgnisse verständlicherweise am größten waren und heute das Verständnis für diese neue Einrichtung am größten ist.
Ich möchte bei dieser Gelegenheit dem Direktorium und den Mitarbeiterinnen und Mitarbeitern der GSI ein herzliches Dankeschön sagen, daß Sie sich nicht in den Elfenbeinturm zurückgezogen haben und abgeschottet von der Öffentlichkeit diese neue Anlage vorbereitet, geplant und umgesetzt haben. Sie waren jederzeit bereit, die Bürgerinnen und Bürger, die sich dafür interessierten, vorbehaltlos zu informieren, und ich glaube, das ist ein Schlüssel des Geheimnisses, daß eine so große und für die Öffentlichkeit fremde Anlage in Darmstadt akzeptiert worden ist.
Es kommt noch etwas anderes hinzu. Wir hatten in Darmstadt in den vergangenen vier Jahren in der letzten Wahlperiode, ich möchte es einmal sagen, die glückliche Konstellation, daß drei Parteien, die für den Wiederaufbau für die Stadt Darmstadt nach 1945 verantwortlich waren, zusammengearbeitet haben. Es gab eigentlich keine Diskussion für die Vertreter dieser drei Parteien, das Vorhaben hier zu unterstützen und dort, wo es Hindernisse gab, beizutragen, daß diese Hindernisse aus dem Weg geräumt worden sind. Das war nicht immer ganz einfach. Der Verlust an Wald ist heute immer ein Gegenstand für heftige und kontroverse Diskussionen. Wir haben aber in diesen vier Jahren festgestellt, daß eine vierte Gruppierung, die zumindest bei uns in Darmstadt im wesentlichen aus Opposition besteht, bei dieser Frage und bei diesem Projekt mitgestimmt hat.

Mitgestimmt hat, weil es auch hier Mitarbeiterinnen und Mitarbeiter der GSI gab und gibt, die – ich weiß das – zu dieser Gruppierung enge Kontakte gehalten haben und auf diese Art und Weise auch Überzeugungsarbeit leisten konnten, daß diese vierte Gruppierung letzten Endes von der Nützlichkeit dieser Einrichtung überzeugt werden konnte und zustimmte. Das war eine ganz wichtige Aufgabe.

Lassen Sie mich eine letzte Bemerkung machen. Als ich diese Einladung bekommen habe, mit dieser kleinen Zeichnung auf der Vorder- und Rückseite, habe ich mir zunächst die Frage vorgelegt: Was bedeutet denn das? Was soll denn das aussagen? Herr Minister Gerhardt und ich, wir haben uns bei Ihrem Einführungsreferat, Professor Kienle, abgestimmt, sozusagen, daß wir vor dem Hintergrund der neuen Anlage und Ihrer Worte zu den Hilfsschülern dieses Auditoriums gehören.

So bin ich mir auch vorgekommen, als ich die Einladung bekommen habe und mir die Frage gestellt habe – ich bitte um Entschuldigung – Was heißt denn eigentlich SIS und was heißt denn ESR? Ich habe gestern abend noch versucht, Sie telefonisch zu erreichen, um mich sachkundig zu machen, damit heute die Blamage nicht allzu groß ist, aber Sie waren hier, die halbe Nacht, wie ich heute morgen erfahren habe, um die letzten Handgriffe, zusammen mit Ihren Mitarbeiterinnen und Mitarbeitern, selbst anzulegen. Ich habe mich aber heute morgen sachkundig gemacht und habe festgestellt – allen, die hier hereingekommen sind, wurde ja dieses „Ionenecho" in die Hand gedrückt –, daß auf der letzten Seite dieses „Ionenechos" die beiden Begriffe erläutert sind. Wissenschaft für alle: SIS = Strahl im Staatsdienst, ESR = Ebbes saust 'rum. Das kann auch ein Hilfsschüler verstehen. Nur, meine sehr geehrten Damen und Herren, wenn man das dann in Verbindung bringt mit der Kreuzung, die auch auf der Einladung abgedruckt ist, muß man sich die Frage stellen, ob diese beiden Bereiche, oder diese beiden Elemente immer ohne Unfall, ohne Verkehrsunfall, diese Kreuzung passieren werden. Das ist das, lieber Herr Professor Kienle, was ich Ihnen und Ihren Mitarbeiterinnen und Mitarbeitern für die Zukunft wünsche.





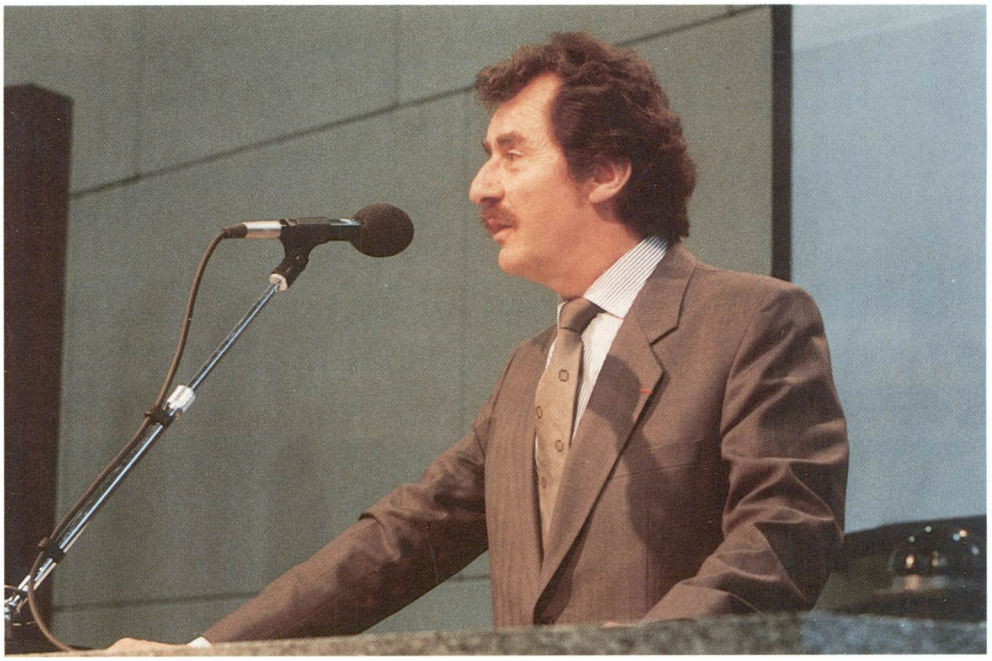
Dr. Wolfgang Gerhardt
Minister für Wissenschaft
und Kunst
des Landes Hessen

Der zweite Laie dieser Eröffnungsveranstaltung tritt zu einem Grußwort an – aber es geht jedem Wissenschaftsminister so, daß er zu Sachverhalten Stellung zu nehmen hat, die er natürlich nicht wie die engen Mitarbeiterinnen und Mitarbeiter und die Experten begreift.
Welch große Kompetenz hier in der GSI versammelt ist, wird durch die Anerkennung bestätigt, die ihre Arbeit im In- und Ausland ständig erfährt. Dies, wie auch das große Interesse von Forschergruppen an den Hochschulen, gibt mir die Zuversicht, daß mit dem Ausbau der GSI eine richtige und zukunftweisende Entscheidung getroffen worden ist.
Meine Damen und Herren, hier in Darmstadt – das sage ich sehr bewußt aus hessischer Sicht – wird mit diesem Schwerionensynchrotron und dem Experimentier-Speicherring ein großes Fenster für neue mögliche grundlegende Erkenntnisse über die Materie geöffnet.
Ich sage das aus hessischer Sicht, GSI ist ja die einzige Großforschungseinrichtung mit Sitz in Hessen – ich wünschte, wir hätten mehr –, aber wenn wir sie schon haben, wollen wir ihr auch die volle Zuwendung der hessischen Landesregierung geben, die Hochschulen in Zusammenarbeit mit der GSI organisieren und für die Zusammenarbeit ausstatten.
Meine Damen und Herren, Forschungsanlagen wie diese sind natürlich in Anbetracht des Aufwandes für den Bau und den Betrieb weder in Hochschulen noch in regionalen Forschungseinrichtungen, sondern nur in nationalen oder internationalen Großforschungseinrichtungen zu realisieren. Die enge Zusammenarbeit mit den Forschungsarbeiten der Hochschulen haben aber hier ihren besonderen Stellenwert.
Der Wissenschaftsrat hat kürzlich einen Entwurf vorgelegt für Empfehlungen zur Zusammenarbeit von Großforschungseinrichtungen und Hochschulen. Er hat zu Recht darauf hingewiesen, daß eine solche Verzahnung die günstigen organisatorischen und apparativen Ausgangsbedingungen schafft, die im Grunde dazu beigetragen haben, daß die Bundesrepublik Deutschland bei der Erforschung der Grundlagen der Materie eine international führende Rolle einnimmt.
Die gemeinsame Entwicklung der Forschungsprogramme, die gemeinsame Planung von Experimenten, der wissenschaftliche Erfahrungsaustausch, insbesondere

auch die Vergabe von Diplomarbeiten und Dissertationen – also eine eigentlich auf Kooperation angelegte wissenschaftliche Kultur – sind der Erfolg der GSI. Die Kooperation ist hier besonders stark ausgeprägt.
Zwei weitere Elemente begünstigen dies: Die Förderung der Verbundforschung durch den Bund hat es den Hochschulen ermöglicht, die Anlagen für die Erforschung der Grundlagen der Materie zu nutzen, darüber hinaus stellt ja die GSI selbst – dafür bin ich sehr dankbar – im Rahmen ihres Forschungs- und Entwicklungsprogramms für die Zusammenarbeit erhebliche Mittel zur Verfügung – der Wirtschaftsplan 1990 sieht hierfür sechs Millionen D-Mark vor. Dadurch können bis zu 60 Doktoranden, insgesamt etwa bis zu 100 Mitarbeiter der Hochschulen an der Arbeit der GSI teilnehmen.
Ich erwähne das besonders, weil die GSI sicher sein kann, daß die Landesregierung auf ihrer Seite auch weiterhin ihre Bemühungen in den Hochschulen selbst verstärkt.
Etwa die Hälfte der Vorhaben des GSI-Hochschulprogramms werden ja mit Forschern und Forschergruppen hessischer Universitäten durchgeführt. Das Engagement des Landes bei der GSI und die entsprechenden Schwerpunktsetzungen in den hessischen Universitäten ergänzen sich ganz hervorragend. Der Übergang zu größeren Experimenten nach Fertigstellung des Schwerionensynchrotrons und des Experimentier-Speicherrings zwingt dazu, größere Experimentiergruppen zu bilden. Aus meiner Sicht muß der Trend dahin gehen, externe Wissenschaftler noch stärker am Forschungsprogramm zu beteiligen.
Es liegt im Interesse des Landes, diese Einrichtung für die Forschung der Wissenschaftler hessischer Universitäten zu vertiefen. Wir haben deshalb seit dem vergangenen Jahr die Schwerionenphysik auch in das Programm des Landes zur Förderung von Forschungsschwerpunkten an den hessischen Hochschulen aufgenommen. Gegenwärtig läuft an den hessischen Hochschulen ein Vier-Millionen-Ausstattungsprogramm für Arbeitsgruppen der Fachbereiche Physik, das ausgelöst worden ist durch diese Investition. Dies wird den zukünftigen Erfolg am Standort Hessen begünstigen und beschleunigen.
Das ist eine sinnvolle Kooperation von Bund und Land, in der Einrichtung einer Großforschungseinrichtung mit Ausstrahlung auf die hessische Hochschullandschaft, und – gestatten Sie mir dieses Wort an die anwesenden Berichterstatter – es wird nicht alles in der Hochschul- und Forschungspolitik nur in Bayern und Baden-Württemberg nach vorne gebracht. Es wird einiges und ist einiges in aller Stille mit großem Erfolg in Hessen vorangekommen. Es wäre gut, wenn wir das auch sagten und berichteten, weil dieses Land, neben seiner ökonomischen Stärke, eines der großen zukünftigen Zentren eines Europas sein wird und der Sitz der GSI und das, was wir veranlaßt haben am Standort Darmstadt in den Kommunikationstechnologien, ein Fingerzeig sein soll, daß dieses Land glaubt, daß wir uns nur behaupten können mit solchen Zukunftsentscheidungen, wie sie auch hier in der GSI getroffen worden sind. Es wäre gut, wenn das die internationale Öffentlichkeit stärker zur Kenntnis nehmen könnte, als dies bisher durch die Berichterstattung in der Bundesrepublik Deutschland seinen Ausdruck gefunden hat.
Meine Damen und Herren, die Landesregierung begleitet die GSI und alle Mitarbeiterinnen und Mitarbeiter mit den besten Wünschen für ihre zukünftige Forschungsarbeit.
Ich bin davon überzeugt, daß dieses auch im internationalen Vergleich einzigartige Projekt die erhofften Arbeitsbedingungen bietet und damit die experimentelle Forschung bisher nicht zugänglicher Fragestellungen der Kern- und Atomphysik ermöglicht.

Herzlichen Dank! Und Glück auf für die zukünftige Arbeit!

Festvorträge



Professor Dr. Claude Detraz
GANIL, Caen, Frankreich
Chairman of NuPECC
(Nuclear Physics European
Collaboration Committee)

Dear Minister Riesenhuber, dear Minister Gerhardt, ladies and gentlemen, dear colleagues,

for more than twenty years the GSI has played a major role in European nuclear physics research. Today it opens a new field of investigation. The legitimate satisfaction and the great expectations of our colleagues here are shared by all those who are engaged, over the world, in the same difficult and fundamental endeavour understanding the basic laws which govern nuclear matter.

We must commend the great work of all those involved in the conception and the construction of SIS/ESR and those who founded it. GSI was born from a vision which sustains actually the whole heavy ion physics.

New fundamental knowledge can be extracted from the study of nucleus – nucleus collisions.

That has not always been taken for granted. There was a time when the emphasis was put rather on detailed controlled perturbation of the nucleus. On nucleon at the time, I remember a senior physicist, quipping "what can we learn by shotting a swiss watch onto a swiss watch?'' The fact that these poor watches happened to be swiss might help you to guess from which quarter that physicist came. It took indeed a vision by bringing large amounts of energy into the nucleus, by inducing violent dynamical motions in that compact hard piece of matter.

Yes, we might open a new field of science.

The persistence of some physicists, and prominent among them was Professor Schmelzer, here in GSI allowed that research to develop fully – the heavier the projectile, the better – and for more than ten years, accelerated uranium nuclei have induced collisions in this laboratory. We can now concur that this scientific endeavour has brought, indeed, a new insight into nuclear matter and the contribution of GSI, in that domain, has been essential.

Through the study of dissipative phenomena induced by nuclear collisions, we have observed the evolution with time, of a system, for the first time at the microscopic level in nature, as if we were able to run a shot by shot picture of the history of an unstable quantum system.

The spectacular discovery of new elements up to atomic number 109 has been a major achievement of UNILAC physics. The imagination of even the most "blasé''

physicist was captured by the fact that, out of the billions of billions of reaction products formed during weeks of beamtime, one could identify the lone sample of a new nuclear species and tell so much of its properties, from its faint and scanty footprints.
Also the velocity of the ions, accelerated by UNILAC, proved to be high enough to strip them of nearly all the electrons, so that very exotic atoms with only one or two electrons in the strong electric field of the nucleus offered a new remarkable testing ground for quantum electrodynamics.
The vitality of GSI has been one important reason for the vitality of nuclear matter physics in Europe and for the predominant role presently led by our continent in that field.
It is worth underlining here a major asset in these developments. The physicists involved have learned to cooperate across borders, in a way which has become actually so natural that it even often goes unmentioned. It has led them to build accelerators which are clearly complementary and are used in a cooperative way. UNILAC, GANIL, SIS/ESR now, to mention only the major ones, have minimum overlap and offer together a remarkable array of tools to study the thermodynamical properties of nuclear matter. That cooperation which allows to make full use for science of the expensive equipment bestowed to us, now goes as far as building collective versatile experimental equipments to be used in turn at several European accelerators.
One recent example is TAPS, the large multidetector of photons, originally intended to equip SIS/ESR, and which is or will be used at GANIL, Mainz, Groningen after being financed by laboratories from three countries.
The future of nuclear physics is a matter of permanent assessment, as is, or should be, the fate of all research fields. That future rests upon several factors, essential among them is the ability of those working in the field to build innovative high class instruments.
The accelerator that we inaugurate today shows that this condition is fulfilled. Another condition for scientific achievement in the field is, that the physicists involved work in increasing interaction at the international, especially at the European level. Both, cooperation and competition, these two sides of the same coin, must grow stronger; this is actually well on the way and developing at a fast pace. The establishment of NuPECC, the nuclear physics European collaboration committee, from within the community is a proof that that pattern is now well established.
NuPECC will indeed act to further develop, at a European level, the ability of nuclear physics to analyse its present issues and to shape its future. This increased awareness of the necessity of European collaboration in nuclear physics, this growing emphasis put on the pooling of resources towards a better effectiveness of research efforts do not detract, of course, from the fact that the major fuel for nuclear physics research comes from individual and local initiatives, from the sustained efforts of universities and national agencies. This is well illustrated by this new accelerator, built by GSI, but on a national scale and yet a major tool for the international community.
The domain of nuclear physics is a fundamental one. It deals with the properties of a finite collection of elementary particles, quarks or nucleons at a microscopic level. It investigates the dialectics of individuum and collective, that major aspect of nature, at the most elementary level, where it manifests itself. In that field of research, at the forefront of the fundamental properties of matter, SIS/ESR today provides European nuclear physics with a beautiful instrument, and presents all of us with an exciting scientific challenge.

Thank you.



Dr. Heinz Riesenhuber
Bundesminister für
Forschung und Technologie

Sehr geehrter Herr Professor Kienle, Herr Oberbürgermeister, Herr Kollege Gerhardt, sehr verehrte Mitarbeiter, meine sehr verehrten Damen und Herren,

ich freue mich, daß wir heute, nach einer langen Arbeit, diese großartige Anlage einweihen können. Ich freue mich sehr, daß diese Arbeit, zu der viele beigetragen haben, in den zehn Jahren von der Idee bis zur Fertigstellung zu einem solchen Erfolg geführt hat. Professor Kienle konnte aufbauen auf den Arbeiten von Professor Schmelzer, die Professor zu Putlitz in diesem Institut fortgeführt hat. Von grundsätzlichen Fragen ausgehend, wurde im Verlauf der Arbeiten einerseits die „Community" erst langsam geschaffen und andererseits die Experimentieranlage über verschiedene Modelle optimiert.
Professor Kienle hat darauf hingewiesen, wie schwierig es in der Vergangenheit war, ein umfassend tragfähiges Konzept zu finden. Ich habe großen Respekt besonders vor seiner ganz persönlichen Leistung, die Gemeinschaft der Schwerionenforscher in Zusammenarbeit im einzigen tragfähigen Konzept zu vereinen. Professor Kienle sprach von dem „Charme nackter Kerne", er hat die Anlage dargestellt, und was sie leisten kann. Ich will dies nicht noch einmal nachzeichnen. Aber was sich hier entwickelt hat, ist Spitzenleistung für die Grundlagenforschung. Sie gibt der GSI den Rang einer international einzigartigen Forschungsmöglichkeit.
Mit besonderer Freude erfüllt mich, daß diese Anlage im Darmstädter Raum errichtet wurde. Hessen hat nur eine Großforschungseinrichtung, aber sie wird in einer deutschen und europäischen Zusammenarbeit sehr viel leisten. Hier ist nicht nur die Zusammenarbeit mit der Hochschule eng. Wir haben auch den nicht immer ganz selbstverständlichen Fall, daß Kollegen im Deutschen Bundestag, Gerhard Pfeffermann, im Europaparlament, Bernhard Sälzer, mitarbeiten in Bereichen von Forschung und Technologie, um dort das Umfeld mitzugestalten, in dem wir zu arbeiten haben. Das heißt also, daß das, was an konkreter Erfahrung vor Ort gemacht wird, eindringt in eine politische Rahmensetzung für die Bedingungen, unter denen wir die Arbeit zu leisten haben.
Es ist immer schwierig, die Erkenntnisse aus der Grundlagenforschung sichtbar zu machen. Sie sind häufig abstrakt, der allgemeinen Analyse, dem allgemeinen Verständnis nur begrenzt zugänglich. Was der Wissen-

schaftler nur als Nebenprodukt sieht, ist in vielen Fällen genau das, was für das Publikum erkennbar werden kann. Wenn hier bei der GSI die Elemente 107, 108 und 109 zum ersten Mal dargestellt werden konnten, dann ist das für die Wissenschaftler selbst kein spektakuläres Ergebnis. Es zeigt aber, daß wir hier in einer Spitzenposition internationaler Zusammenarbeit etwas zustande bringen, was mit anderen Methoden nicht erreichbar ist, daß wir etwas darstellen, was international herausragend sichtbar wird, auch wenn für die eigentliche wissenschaftliche Arbeit anderes vorrangiger und gewichtiger ist.

Professor Kienle hat mit einer zartfühlenden, aber doch noch erkennbaren Kritik darauf hingewiesen, daß ich zu einer früheren Phase einige neugierige Fragen gestellt habe. Es gab durchaus eine Phase, in der wir nicht ganz sicher waren, wie tragfähig das Konzept der neuen Anlage im Endeffekt sein wird. Ich glaube, daß diese Phase richtig, notwendig und gut gewesen ist. Wenn wir uns nicht immer wieder mit größter Sorgsamkeit die Frage nach der wirklich optimalen Lösung gestellt hätten, wenn wir nicht mit den Wissenschaftlern immer wieder das Konzept kritisch in Frage gestellt hätten, dann wäre nicht das am Institut entstanden, was Sie gerade in so eindrucksvoller Weise als Element einer europäischen Zusammenarbeit dargestellt haben.

Ich möchte auch das, was hier von mehreren Rednern als wissenschaftliche Aufgabe der neuen Anlage dargestellt worden ist, nicht nachzeichnen. Aber ich möchte doch in aller Bescheidenheit auf einen Bereich hinweisen, der nicht im Zentrum der Arbeit einer solchen Institution der Grundlagenforschung stehen kann, aber der meiner Meinung nach doch wichtig ist und für den Partner zu finden eine bedeutende Aufgabe darstellt. Wenn ich also höre, daß man in Zusammenarbeit mit dem Deutschen Krebsforschungszentrum in Heidelberg und der Universität Heidelberg jetzt eine Strategie zu entwickeln sucht, die eine neue Methode der Krebsbehandlung ermöglichen kann, entspricht dies nicht den ursprünglichen Vorstellungen von den Aufgaben der GSI. Andererseits haben wir eine Chance, eine neue Technik und eine neue Methode auf mögliche Anwendungen zu überprüfen. Ich glaube, daß dies zur Nutzung von neuen wissenschaftlichen Geräten hinzugehört. Natürlich handelt es sich hier in Darmstadt zuerst um Geräte der Grundlagenforschung, und es wäre falsch, wenn irgend etwas abgestrichen würde von dem hohen Anspruch, exzellente Wissenschaft unter extremen Bedingungen an der Front der wissenschaftlichen Diskussion voranzuführen. Aber wenn man so ein Gerät hat, das völlig neue Qualitäten von Arbeiten erschließt, dann ist es wichtig zu prüfen, ob und inwieweit es auch für praktische Zwecke angewendet werden kann. Wenn man also in den vergangenen Jahren Filter erzeugt hat, bei denen gesunde rote Blutkörperchen durch wohldefinierte Löcher hindurchgehen können, kranke aber nicht, wenn also Filter erzeugt worden sind, die für die Medizin hilfreich sein können, dann ist dies ein Ansatz. Wenn Möglichkeiten erkennbar sind, etwa in der Materialforschung, aber vielleicht auch in ganz anderen Bereichen, in der Archäologie, in der Kunstgeschichte, in der Dotierung von Festkörpern, Materialien zu untersuchen und Anregungen für ganz andere Wissenschaften zu geben, so möchte ich Sie sehr ermutigen, solche Kooperation weiter zu suchen.

Dies gilt auch für die Anwendung solcher Beschleuniger in der wissenschaftlichen Arbeit der Industrie in einer völlig anderen Richtung als der, für die sie ursprünglich entworfen worden sind. In der Arbeit mit der Industrie haben wir wirklich die Chance, nicht nur neue Techniken zu erproben und zu entwickeln. Wenn ich mit jungen Wissenschaftlern diskutiere in Grenoble, in Berlin oder hier, die an solchen hochmodernen Geräten der Grundlagenforschung arbeiten, sprechen sie oft davon, daß sie Ideen haben für einen Einsatz der Geräte auch in der Industrie. Sie sprechen von möglichen Kooperationen. Sie sprechen auch darüber, daß dann, wenn diese Verfahren in der Industrie eingeführt wären, auch für einen jungen Wissenschaftler die Chance, mit seinem Wissen in die Industrie überzugehen und dort neue Aufgaben zu finden, qualitativ besser wäre.

Kooperationen von Wissenschaft und Industrie sind elementar wichtig. Wissenschaft ist dann gut, wenn sie in ihrem Bereich Exzellentes leistet. Sie muß aber gleichzeitig auch ausstrahlen. Das Paradigma der 90er Jahre ist nicht mehr die isolierte Höchstleistung, sondern eine zunehmende Integration der Wissenschaft. Neue Wissenschaft ist nur durch hochgezüchtete Technik möglich und neue Technik nur aus Wissenschaft. Nur aus engen Kooperationen können neue Qualitäten von Wissenschaft entstehen. Und wenn durch eine Vernetzung eine integrierte Forschungslandschaft entsteht, dann

glaube ich, daß Wissenschaft nicht mehr nur die isolierte Spitzenleistung bringt, sondern insgesamt dazu beiträgt, komplexe Probleme in einer sich rasch verändernden Welt zu lösen. Insofern ist diese Anlage eingebettet in eine Gesamtstrategie der Grundlagenforschung.
Ich möchte die Strategie nicht im einzelnen darstellen. Aber es wurde in den letzten Jahren immer offenkundiger, daß sowohl eine Zukunft in Wohlstand als auch der Rang einer Industrienation zunehmend von Wissenschaft geprägt wird. Dies hat seine Bedeutung für unseren Umgang mit der Wissenschaft. Die drei großen Industrienationen geben knapp drei Prozent des Bruttosozialproduktes für Wissenschaft aus: USA, Japan und die Bundesrepublik Deutschland. Der Anteil der USA fällt eher etwas zurück, während der von Japan eher etwas steigt. Wir sind hier in einer sehr scharfen Konkurrenz. Bemerkenswert ist jedoch, daß die Strategien sich unterscheiden. Die USA wenden 12 Prozent ihres Wissenschaftsetats insgesamt – des gesamten nationalen Wissenschaftsbudgets – für Grundlagenforschung auf. USA also 12 Prozent, Japan 13 Prozent, Deutschland um die Hälfte mehr, 19 Prozent. Im Haushalt des Bundesforschungsministers schlägt dies mit knapp 3 Mrd. DM in diesem Jahr zu Buche.
Dies ist ein Teil einer anspruchsvollen Strategie, die wir seit 1982 konsequent vorangetrieben haben. Sie beruht auf dem Willen, Spitzenleistung zu ermöglichen, und auf dem Wissen, daß durch Spitzenleistung eine ganze Forschungslandschaft gestaltet wird.
Wir haben die Zuwendungen an die Universitäten mehr als verdoppelt in der Zeit seit 1982. In einer Zeit, wo der Haushalt des Forschungsministers um 25 % gestiegen ist, sind diese Zuwendungen an die Universitäten von 310 Mio. auf über 640 Mio. DM gestiegen. Dies bedeutet, daß wir hier Prioritäten gesetzt haben. Einen besonderen Hinweis verdient die Verbundforschung. Wir haben Prioritäten gesetzt für Verbünde in der Grundlagenforschung zwischen den Großforschungseinrichtungen und den Universitäten. Denn auch hier gilt: Nicht die isolierte Einzelwissenschaft, nicht die hervorragende Einzelinstitution ist entscheidend. Entscheidend ist die Rolle, die sie in einer sich integrierenden Wissenschaftslandschaft so spielt, daß die besten Wissenschaftler Kristallisationspunkte finden. Punkte, an denen sie die besten Partner finden können, um mit ihnen zusammenzuarbeiten an den besten Experimenten.

Dabei ist die GSI in mehrfacher Hinsicht eindrucksvoll. Professor Kienle hat darauf hingewiesen, daß nur ein Bruchteil der vorgeschlagenen Experimente aufgrund der begrenzten Strahlzeit angenommen werden kann. Dies ist einerseits bedauerlich für manchen Experimentator, zeigt aber andererseits, daß wir die besten Experimente auswählen können aus einer Vielzahl von Alternativen. Ich glaube, daß sich die hervorragende Zusammenarbeit zwischen Wissenschaft und Technik, die sich schon beim Aufbau dieser Anlage gezeigt hat, gerade hier bewähren wird. Ebenso werden wir sie brauchen beim Aufbau der Experimente. Ich halte es für eine großartige Leistung, daß in einer engen Zusammenarbeit zwischen außerordentlich engagierten Mitarbeitern dieser Einrichtung, Ingenieuren aus der Industrie, Wissenschaftlern und Technikern aus unterschiedlichen Bereichen und den Mitarbeitern von Hochschulen , eine integrierte Strategie entstanden ist, in der die einzelnen Elemente nicht isoliert waren, sondern sich gegenseitig gestützt haben.
Ich freue mich besonders, daß dies auch eine europäische Zusammenarbeit geworden ist mit Beiträgen zu den Experimenten aus Frankreich, aus Italien, aus den Niederlanden, aus Polen und der Sowjetunion: Gerade im Rahmen unseres Abkommens zur wissenschaftlich-technischen Zusammenarbeit haben sich solche Ansätze in den letzten Jahren hervorragend und ermutigend entwickelt. Dies alles gehört zu einer integrierten und vernünftigen Strategie, die nur dann gelingt, wenn Wissenschaftler in Offenheit aufeinander zugehen, sich die besten Partner suchen, wenn aus der Gemeinsamkeit der Ziele, aus einer Kombination von Wettbewerb und Partnerschaft, von Kooperation und Konkurrenz die beste Wissenschaft für die Zukunft entwickelt werden kann.
An einer Stelle hat Professor Kienle mit der ihm eigenen und bescheidenen Art darauf hingewiesen, daß ich gelegentlich sage: „Schon wieder ein Beschleuniger." In der Tat ist dies ein Grund nachzudenken. Wir haben in den letzten Jahren Großprojekte abgearbeitet, die bis 1982 stehengeblieben waren. Diese waren zum Teil noch Ergebnisse der Maier-Leibnitz-Kommission aus den 70er Jahren. Ebenso war die Mehrzahl der Vorschläge für Großgeräte der Pinkau-Kommission nicht abgearbeitet.
In den letzten sieben Jahren wurden insgesamt acht Milliarden Mark für Großgeräte aufgewendet; der BMFT

trug dabei dreieinhalb Milliarden Mark, also fast die Hälfte – ein ungeheures Investitionsprogramm. Ein annähernd vergleichbares Investitionsprogramm hat es in der Bundesrepublik Deutschland noch nicht gegeben. In diesem Programm haben sehr große Beschleuniger eine Rolle gespielt. Ich sage dies hier mit Respekt und mit Freude, und ich stelle auch mit Freude fest, daß das, was viele bezweifelt haben, hier gelungen ist.

Ich habe im Parlament mehrere heftige Auseinandersetzungen mit der Opposition gehabt. Man hat mir vorgeworfen, ich trüge hier mit Riesenbeträgen ein Risiko, das überhaupt nicht zu verantworten sei. Man hielt diese großen Beträge für nicht beherrschbar. Man befürchtete, daß Großprojekte immer aus der Kontrolle liefen und die Kosten am Ende größer als ursprünglich veranschlagt seien. Ich halte es für eine der großartigsten und wichtigsten Ergebnisse, daß bei sehr großen Projekten die Kostenvoranschläge präzise eingehalten worden sind. Mit 275 Mio. DM hier bei SIS und ESR. Mit außerordentlicher Disziplin in den Zeit- und Kostenplänen konnte das erreicht werden. Das ist jetzt nicht Pfennigfuchserei, das ist eine grundsätzliche Frage, die im Verhältnis zwischen Wissenschaft und Parlament immer wieder auftaucht.

Wenn wir bei den Parlamenten die begründete Uberzeugung festigen können, daß wir auch bei sehr großen Experimenten mit äußerster Disziplin in den Zeit- und Kostenplänen bleiben können, dann wächst das Vertrauen, das '82 verlorengegangen war, daß Großprojekte zusammen mit der Wissenschaft verantwortungsbewußt und sinnvoll aufgebaut werden können. Der Politiker kann nicht immer im einzelnen verstehen, worin der Charme und die Faszination der wissenschaftlichen Aufgabe bestehen. Aber er muß begründetes Vertrauen haben dürfen, daß die Entscheidungsgrundlagen verläßlich und die Entscheidungen dauerhaft und tragfähig sind.

Und wenn wir hier bei allen diesen Großprojekten in den Zeit- und Kostenplänen geblieben sind, wenn HERA mit 1,394 Mrd. DM veranschlagt war und nach allem, was wir jetzt erkennen, mit 1,394 Mrd. DM fertiggestellt wird, wenn die großen Forschungsschiffe in den Zeit- und Kostenplänen geblieben sind, wenn wir bei dem hochehrgeizigen kontinentalen Tiefbohrprogramm und dem Röntgensatelliten ROSAT in der Planung bleiben, die jetzt bei allen Risiken und Unwägbarkeiten dieses Projektes überschaubar bleibt, dann zeigt sich, daß wir sehr wohl große Projekte angehen können, sie vernünftig beherrschen, sie also aufbauen, daß Sprünge, Quantensprünge in der Wissenschaft möglich werden. Es zeigt sich aber auch, daß in internationaler Zusammenarbeit neue Kristallisationspunkte für eine exzellente Wissenschaft entstehen. Und daraus ergeben sich dann natürlich auch Folgen.

Wenn man Anfang der 80er Jahre von einem Brain-Drain aus Europa, aus Deutschland nach den USA gesprochen hat und davon, daß die Zahl der guten Wissenschaftler, die nach USA weggehen, immer weiter wachsen würde, wenn man befürchtete, daß die deutsche Wissenschaft gerade ihre besten Köpfe verlieren könnte, dann hat sich in diesem Bereich die Welt inzwischen völlig geändert. Erkennbar ist geworden, daß wir nicht nur Geld investiert haben, sondern daß die Attraktivität des Wissenschaftsstandortes Bundesrepublik Deutschland ständig zugenommen hat. Wenn wir mit den Kollegen der verschiedenen wissenschaftlichen Organisationen aus den Vereinigten Staaten sprechen, wird festgestellt, daß jetzt nicht mehr wie selbstverständlich die Wissenschaftler aus Europa nach Amerika kommen und daß damit der wissenschaftliche Nachwuchs in dem großen Umfang, den ihr Land braucht, nicht mehr zur Verfügung steht. Nein, man hört, daß in wachsendem Maß Wissenschaftler aus den Vereinigten Staaten zurückgehen, auch daß junge Wissenschaftler auf längere Zeit nach Europa, nach Deutschland gehen, weil dort ausgezeichnete Bedingungen für die Arbeit geschaffen worden sind.

Auch dies gehört zu unserem Beitrag, nicht etwa nur in der Konkurrenz, nein, auch in der Kooperation, in der Möglichkeit einer weltweit zusammenwachsenden wissenschaftlichen Gemeinschaft, auch in unserem Land exzellente Voraussetzungen für die wissenschaftliche Arbeit zu bieten.

Ich bin deshalb – und ich wiederhole dies – sehr dankbar, daß durch ein großes Engagement und durch eine große Disziplin von Wissenschaftlern und Ingenieuren, der Geschäftsführung und der Mitarbeiter, bis hin zu den Handwerkern am Bau, diese ganze Anlage in präzisen Zeit- und Kostenplänen aufgebaut werden konnte, und ich halte dies, über dieses eine Projekt hinaus, für eine grundlegende vertrauenschaffende Arbeit, die den selbstverständlichen Umgang der Parlamente auch mit großen Projekten erleichtern könnte.

Auf der anderen Seite weise ich auch auf einen weiteren Punkt hin. Nach der augenblicklichen Diskussion wird das Paradigma der 90er Jahre bei großen Projekten nicht ausschließlich, vielleicht nicht einmal hauptsächlich, das Großgerät sein. Es kann sein, daß die bestimmende Größe Projekte mit einer sehr großen Komplexität sein werden, die Zusammenarbeit von ganz unterschiedlichen Bereichen erfordern. Es ist nicht so, daß ich jetzt sagen würde, die Diskussion über Großgeräte ist abgeschlossen. Das ist nicht der Fall. Wir werden dies immer wieder zu prüfen haben, aber es zeichnet sich doch ab, daß das übergeordnete Paradigma in der Wissenschaft der 90er Jahre jenes der Komplexität zu sein scheint, das Zusammenspiel aus unterschiedlichen Wissenschaftsbereichen, die einen Blick auf das Ganze ermöglichen.

Ein Beispiel ist die Frage der Gene und Genomanalyse bis hin zum menschlichen Genom – ein Zusammenspiel unterschiedlicher Wissenschaften und Techniken. Hierbei handelt es sich um ein ungeheuer großes Projekt, das jedoch charakteristischerweise nur dann, wenn es international koordiniert wird, überhaupt durchführbar wird. Ebenso steht es bei der Arbeit an der künstlichen Intelligenz oder bei Fragen der Neuroinformatik, um nur einige wenige Bereiche zu nennen, in denen Wissenschaften über Grenzen zusammenwachsen und Aufgaben großer Komplexität internationale Vernetzungen der Wissenschaft erfordern und auch erlauben.

Die Wissenschaft ist eine integrierende Kraft über die Völker hinweg. Dies war in der Vergangenheit immer grundsätzliches Paradigma, aber mit dieser Stärke und dieser Eindeutigkeit in diesen Jahren wird eine völlig neue Qualität erreicht. Die Wissenschaft wird in Zukunft bei jedem großen Projekt jeweils – nicht nur innerhalb der einzelnen engen Bereiche – abzuwägen haben, welche Prioritäten zu setzen sind. Eine besonders schwierige und umfassende Aufgabe der Wissenschaft ist, daß über die Gesamtheit der Wissenschaften hinweg Prioritäten gefunden werden. Die Front, an der Wissen besonders schnell entsteht, muß erkannt werden und ebenso jene Bereiche, in denen die großen Sprünge in der Erkenntnis möglich sind. Diese großen Erkenntnisschritte entstehen immer wieder im Dialog der Gesamtheit der Wissenschaften. Dieser Dialog erfordert, daß über die einzelne Wissenschaft hinaus ein Blick auf das Ganze der wissenschaftlichen Entwicklung ermöglicht wird aus einem umfassenden und kompetenten Dialog der wissenschaftlichen Gemeinschaft per se.

Auch hier, im regionalen und weltweiten Zusammenwachsen, aber auch im Zusammenwachsen der Disziplinen, entsteht wieder eine Möglichkeit des Blickes auf das Ganze, der in den vergangenen Jahren verloren schien und der jetzt mit einer neuen Qualität aufscheint. Wenn die Völker des Ostens sich zunehmend wiederfinden in unserer wissenschaftlichen Gemeinschaft, einer Gemeinschaft, der sie über Jahre nicht angehören konnten und zu der sie keinen Zugang hatten, dann halte ich es für eine großartige Sache, daß sie mit der Herzlichkeit aufgenommen werden, die sich in den vergangenen Jahren zunehmend gezeigt hat. Dies ist selbstverständlich für Wissenschaftler aus dem anderen Teil unseres Landes, es greift zunehmend über auf Wissenschaftler aus Polen, der Tschechoslowakei, Ungarn und den übrigen Ländern des Ostblocks, aus der Sowjetunion, die in die wissenschaftliche Gemeinschaft zurückkehren und aus der Freiheit und Selbstbestimmung der Wissenschaft neue Aufgaben und Ziele erkennen.

Meine sehr verehrten Damen und Herren, ich bin der Zuversicht, daß die GSI mit ihren großartigen und international herausragenden Geräten eine glänzende Forschung betreiben wird: Eine Forschung, die attraktiv ist für die besten Köpfe weltweit, eine Forschung, die die Wissenschaft voranbringt, eine Forschung, die gleichzeitig bedenkt, wie sie sich vernetzen kann in andere Bereiche, die prüft, wo technische Anwendungen sind, eine Forschung, die sich nicht als eigenständiger Elfenbeinturm begreift, sondern die sich integriert in die Gemeinschaft der Wissenschaften, eine Forschung, die nicht nur den Wissenschaftlern der GSI exzellente Arbeitsbedingungen ermöglicht, sondern die Dienstleistungen erbringt für viele Universitäten, für Wissenschaftler aus anderen Teilen Europas und weltweit. Eine Institution, die selbst eine gute Forschung betreibt, aber die attraktiv ist für alle anderen – weltweit.

Und was hier geschehen kann, ist das, was Wissenschaft auch schon in anderen Bereichen geleistet hat. Wenn Völker aufeinander zugehen sollen, wenn die Welt zusammenwächst zu einer einzigen Verantwortungsgemeinschaft für diesen verletzlichen Globus, dann hat Wissenschaft hier zuerst diese Paradigmen gesetzt. Denn Wissenschaft ist von ihrer Anlage her weltumspannend und grenzüberschreitend. Die Ziele, die wir ge-

meinsam zu erreichen haben, sind größer als das, was uns insgesamt aus der Vergangenheit trennt. Und wenn aus diesem Geist Zukunft errichtet wird, wenn der Geist der Wissenschaft, der Geist einer weltumspannenden Friedlichkeit das Wissen, daß wir gemeinsam vieles erreichen können, was dem einzelnen unmöglich sein wird, zum herausragenden Paradigma der 90er Jahre wird, dann werden wir in einem neuen Geist Zukunft errichten. Die großen Aufgaben der Zukunft werden entscheidender sein als die Sorgen und die Spannungen der Vergangenheit.
Diesen Blick in die Zukunft, diesen Mut und diese Zuversicht, diese Bereitschaft, aus Verantwortung Zukunft zu gestalten in Wissenschaft und Technik – in einem Verständnis zwischen Wissenschaft und Politik –, dies wünsche ich uns allen, einem jeden an seinem Platz.
Und so wünsche ich den Wissenschaftlern und den Mitarbeitern der GSI, aber auch allen Wissenschaftlern, die sich hier zu diesem Festtag zusammengefunden haben, eine großartige Arbeit in ihrem eigenen Feld. Darüber hinaus wünsche ich die Strahlkraft in den Köpfen der Menschen, die die Wirklichkeit verändert und zu der Wissenschaft mehr leisten kann als vieles sonst.

In diesem Sinne, einen guten Start, Glück auf!



Glückwünsche

EINGEGANGEN 13. März 1990

THE WHITE HOUSE

WASHINGTON

March 1, 1990

Dear Paul:

My deepest appreciation for your kind invitation to participate in the inaugural ceremony for the new heavy ion synchrotron SIS at GSI that you have scheduled for Monday, April 23, 1990.

This is obviously a ceremony that I would very much have looked forward to attending, but unfortunately, as I told Walter Greiner in a recent telephone conversation, having held off my reply because I was trying to to arrange my schedule to make it possible for me to attend, I must now tell you that I simply must be in Washington during the period in question.

As you may have heard, the President is hosting his first White House conference and has selected the topic, "Science and Economics Research Relating to Global Change" as the topic for that conference. He has asked me to serve as co-chairman of the conference that will involve ministerial level delegates from some twenty nations and will require extensive activity to organize it on the short turnaround time that the April 17th and 18th dates require. Almost immediately following that session, I am chairing the U.S. side of the new U.S./USSR Bilateral Commission on Science and Technology here in Washington, and this activity will continue through Monday, April 23, so that it will be impossible for me to join you.

Let me then only take this opportunity to extend to you and to all your colleagues, who are responsible for this magnificent new machine, my very warmest congratulations and best wishes for a very long and productive series of researches with it. I must admit to a certain disappointment that my present duties in Washington simply make it impossible for me to maintain active contact with either the research activities in my own laboratory at Yale or with the exciting new work which will clearly be underway at SIS.
When next your travels bring you to Washington, please do let me know so that we can arrange to get together. In the meantime, my very warmest best wishes.

Sincerely yours,

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

Министерство атомной энергетики и промышленности СССР
USSR Ministry of Atomic Power & Industry
109180, Moscow, Staromonetny pereulok 26, USSR
Telex: 411888 mezon Fax No: 230 24 20

Our ref./Исх.No GO /F 1990-

FAX.No. 06 151 359 785

To/Кому: Prof.Dr.P.Kienly, Wissenshaftich-technisher Geschaftsfuhrer und Vorsitzender des Wissenschaftlichen Directoriums der GESELSCHAFT FUR SCHWERIONENFORSCHUNG MBH

From/От: A.Vassiliev, Main Department of Fundamental Problems of Nuclear Physics and Thermonuclear Research. Ministry of Atomic Power and Industry. USSR

Dear prof. P.Kienle.

I am glad to congratulate you and your colleagues with the launching of the SIS/ESR. We are sure that your hard and elaborate work will result in a new knowledge and outstanding discoveries in nuclear physics

Thank you very much for the invitation, but unfortunately I will not be able to take part in the inauguration of the SIS/ESR.

Sincerely yours, A.Vassiliev

25.04.90/17:19
geneva our ref 1251 mh

professor paul kienle
gesellschaft fuewr schwerionenforschung mbh

on behalf of cern, i am sending you and to the staff of gsi my warm congratulations for the inauguration of the gsi heavy ions synchrotron and gsi experimental esr collider, along with my best wishes for a fruitful exploitation of these new scientific instruments.

sincerely yours

carlo rubbia, cern

professor p. kienle

dear professor kienle,
on these festive inauguration days i take great pleasure in expressing to you my admiration with the courage you and your colleagues have shown while overcoming the numerous difficulties in achieving the high goal.
i hope that our contacts, both scientific and personal, will continue to develop in the future.
cordially g.n. flirov=

cordially g.n.flerov=

419593 gsi d
412621 dubna su

april 19, 1990

from : roland bergere, head of the nuclear physics department
cen/saclay (france).

to : professor dr. paul kienle
g.s.i. darmstadt (r.f.a.)

dear professor dr. kienle,

due to unexpected duties i will unfortunately be unable to attend the inauguration of sis on monday, april 23. i strongly regret it and want anyway to present my warm congratulations for the remarkable achievement of sis.

very truly yours.

sign□ : roland bergere

419593 gsi d
813593d txcb pl
professor p. kienle
gsi, darmstadt
congratulations and wishes of a wealth of scientific successes
with sis-esr.
wilhelmi, dakowski, matulewicz, sikora
nuclear physics dicision,physics dept, warsaw university
warsaw 1990-04-23

espost · Deutsche
Telegramm – TBSt Darr

professor dr.p.kienle
gsi,
darmstadt

we congratulate the success of the new synchrotroncooler ring of gsi. we look forward to exciting scientific results from this facility in the near future. professor t.yamazaki, director of institute for nuclear study, university of tokyo.

TELEX SCHNEEWEISS TE

laboratorio nazionale del sud - infn
v.le a. doria ang.via s.sofia catania

prof. dr. paul kienle
g.s.i.
postfach 110552
d-6100 darmstadt
f.r. germany

we are very happy to know the new g.s.i. facility is fully operational we congratulate for this great achievement and we express all our good wishes for the scientific life of your institution.

giuseppe pappalardo emilio migneco

WHITE TELEX SNEE

Office of the Deputy Vice-Chancellor (Research)

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

1 Jan Smuts Avenue, Johannesburg

P O WITS
2050, SOUTH AFRICA

'Uniwits'
Telex 4-50937 = VCWITS
(011) 716-4186

DATE: . 900423 (Festtag)

FAX #: .49-6151-359785

TO: . Professor Dr Paul Kienle
Wissenschaftlicher Geschaftsfuhrer der GSI

From: Fax # (South Africa)-(11)- 339 7740
Friedel Sellschop

 # Pages: . 1

Message:

Please accept my warm regards and congratulations on the occasion of the inauguration and dedication of the SIS and ESR development of the UNILAC facility. Kindly convey my appreciation for this successful development to all those who have been concerned.

May I express the fervent wishes of both myself and through me of the University of the Witwatersrand, for ensuing years of research of the excellence that has characterized the scholarly products of the past years emanating from the work of this internationally renowned facility and Institute.

Warm felicitations on this historic occasion,

Friedel Sellschop

The University of the Witwatersrand rejects racism and racial segregation. It is committed to non-discrimination particularly in the constitution of its student body, in the selection and promotion of its staff, and in its administration.

NATIONAL SUPERCONDUCTING CYCLOTRON LABORATORY
MICHIGAN STATE UNIVERSITY

Telephone: (517) 355-9671
Telex: 510 601 9207 NATSUPCYCLAB
Bitnet: Postmaster@MSUNSCL
Fax: 353-5967

Address: NSCL/CYCLOTRON LABORATORY
Michigan State University
East Lansing, MI 48824-1321 USA

→ Kie
→ Böhne

21 March 1990

Professor Dr. Paul Kienle
Director
GSI
Postfach 11 05 52
6100 Darmstadt
Federal Republic of Germany

Dear Paul:

Commissioning of the SIS/ECR facility at GSI is a great step forward for nuclear science. All of us at the NSCL have been following this project with great interest and send you and your colleagues our warmest congratulations on bringing these accelerators to completion in such a timely fashion.

We're all looking forward to the excellent science that your new facilities will make possible.

Yours sincerely,

Sam

Sam M. Austin
Director, NSCL

CHARLES UNIVERSITY
Faculty of Mathematics and Physics
Nuclear Centre

Address: Nuclear Centre
V Holešovičkách 2
180 00 Praha 8
CZECHOSLOVAKIA

Prof.I.Úlehla

Telephone: 84 99 51
Telex: 121673 MFF

No 99/90/NC

Prague 9.4.1990

GSI
Prof. P. Kienle

Postfach 110552
6100 Darmstadt

B R D

Dear Professor Kienle,

Many thanks for your kind invitation to the inaugural ceremony devoted to the new acceleration facilities built and constructed in GSI.

It is a great achievement of your laboratory. Please, accept my kindest congratulations and best wishes for the future experiments. I hope they will provide new and very interesting results.

Unfortunately, I shall not be able to attend the ceremony because of my tight time schedule. Would you accept my apology.

With the best personal regards and hopes to see you again.

Yours sincerely

The University of Liverpool

FROM PROFESSOR P.J. TWIN

TEL. NOS: DIRECT 051 — 794 - 3378
UNIVERSITY: 051 — 794 - 2000
TELEX NO: 627095 UNILPL G
FAX NO: 051 — 794 - 3444

DEPARTMENT OF PHYSICS
OLIVER LODGE LABORATORY OXFORD STREET P.O. BOX 147 LIVERPOOL L69 3BX

Ref: PJT/JY

5 February 1990

EINGEGANGEN - 9. Feb. 1990

Prof. Dr. P. Kienle
G.S.I.
Postfach 11 05 52
Planckstraße 1
D-6100 Darmstadt
WEST GERMANY

Dear Paul

Thank you for the invitation to the inaugural ceremony for the new acceleration facilities at GSI, the heavy ion synchrotron SIS and the experimental storage ring ESR on Monday 23rd April 1990. I should have very much liked to attend this important event, but it clashes with the Oak Ridge conference on "Nuclear Structure in the Nineties" at which I am scheduled to speak on the 23rd April.

My congratulations for the rapid progress you and your colleagues have made in building the new facilities and I am sure that they will provide much new physics in the coming years.

Yours sincerely

Peter

Fotodokumentation



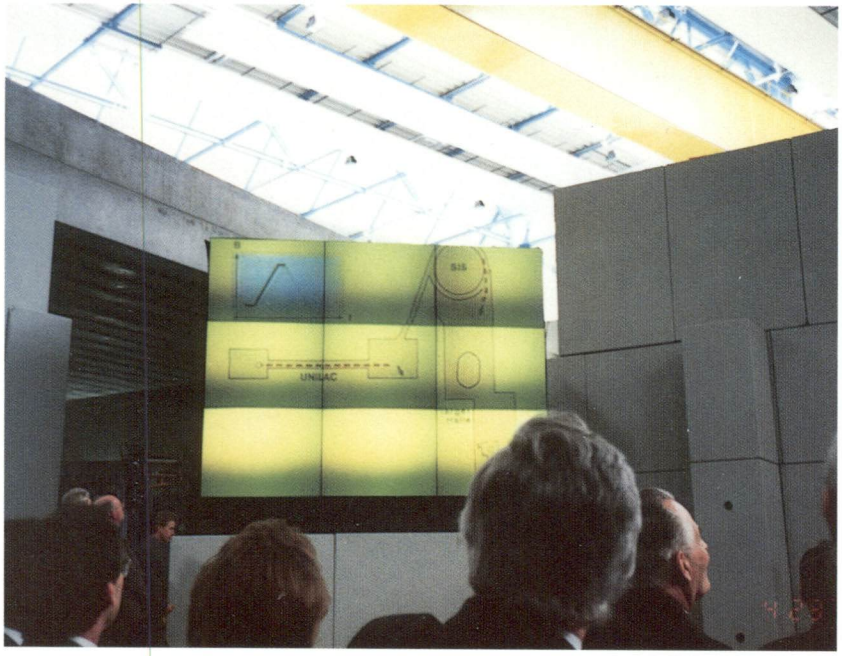








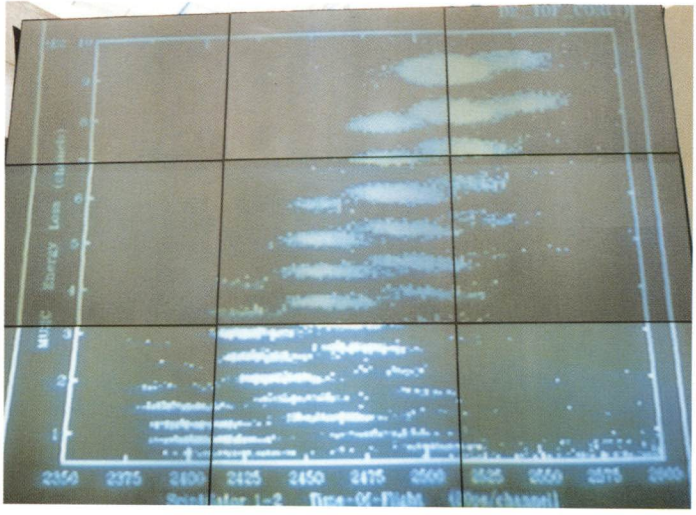



UNIVAC

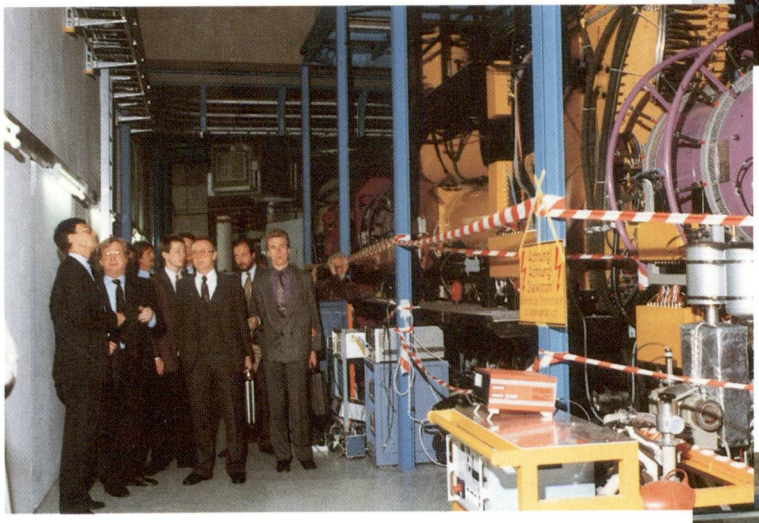


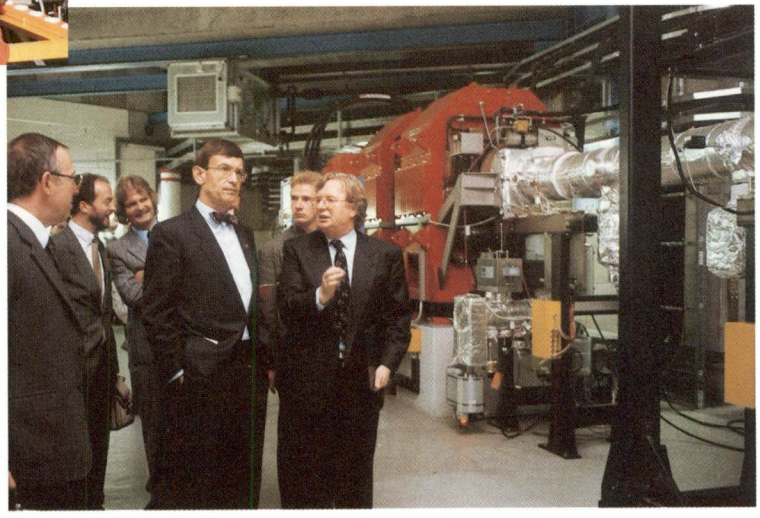




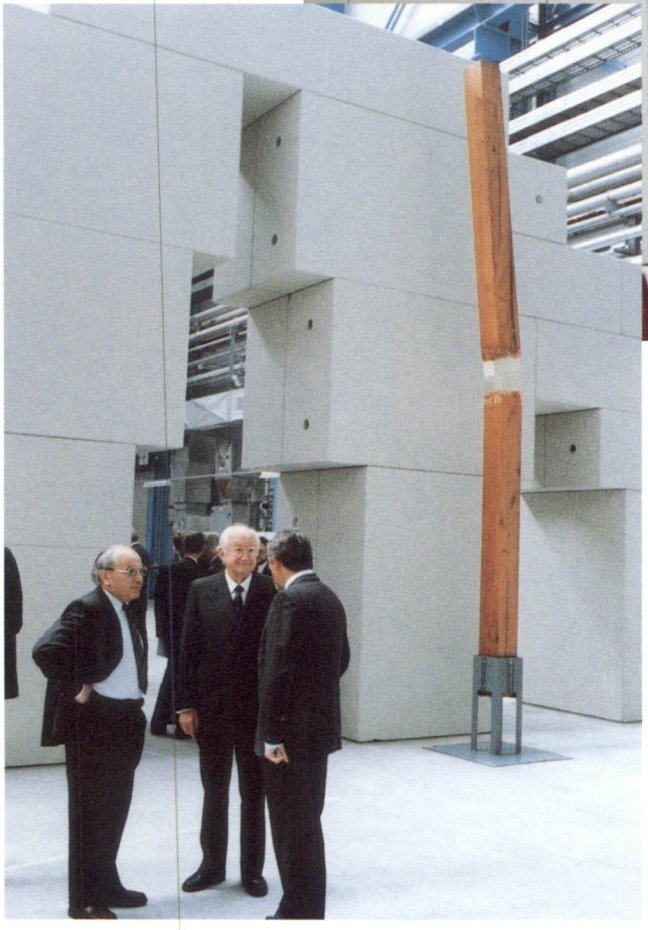

MeV
Energy Loss
2350
2375
2400
2425
2450
2475
2500
2525
2550
2575
2600
Time-Of-Flight









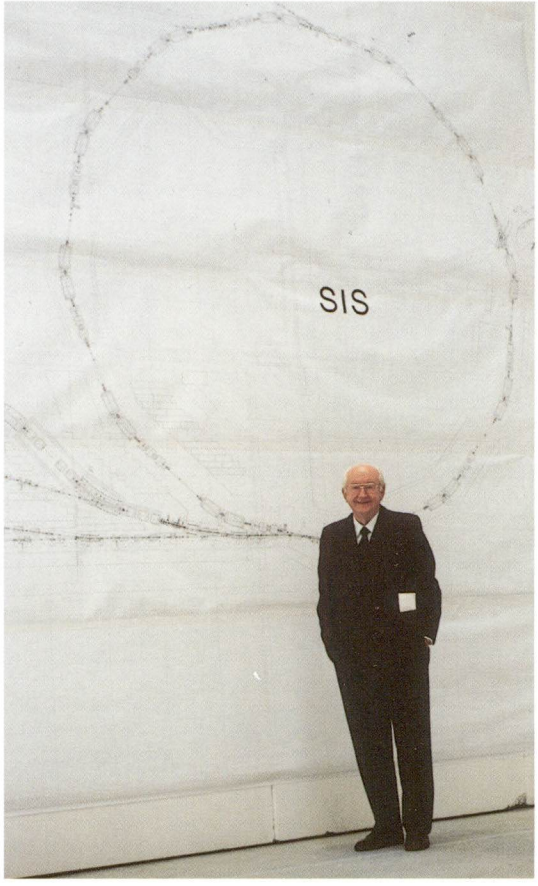











SIS



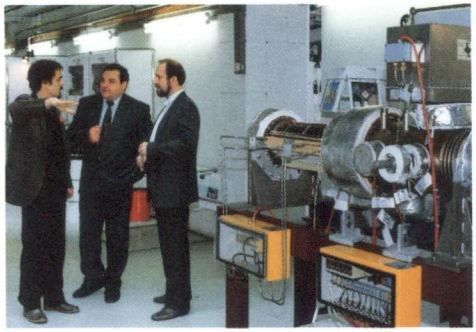

ZDF

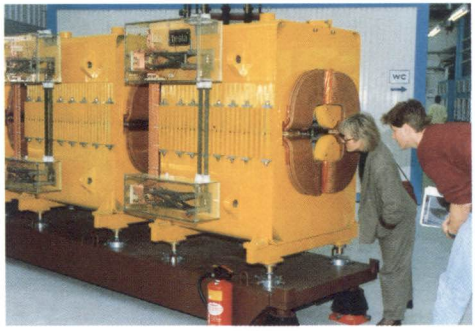

RIESENHUBER
GERHARDT






INDUSTRIE UND WISSENSCHAFT
AEG



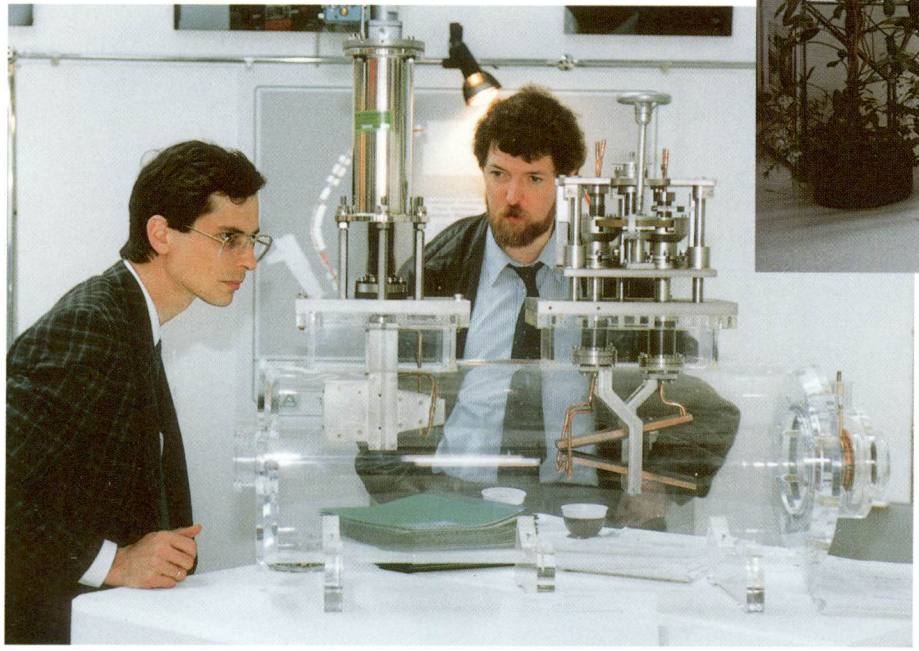



ELIN
Magnet-Technology
ELIN
Magnet-Technology
Jäger




GRÖSCHEL
tesla





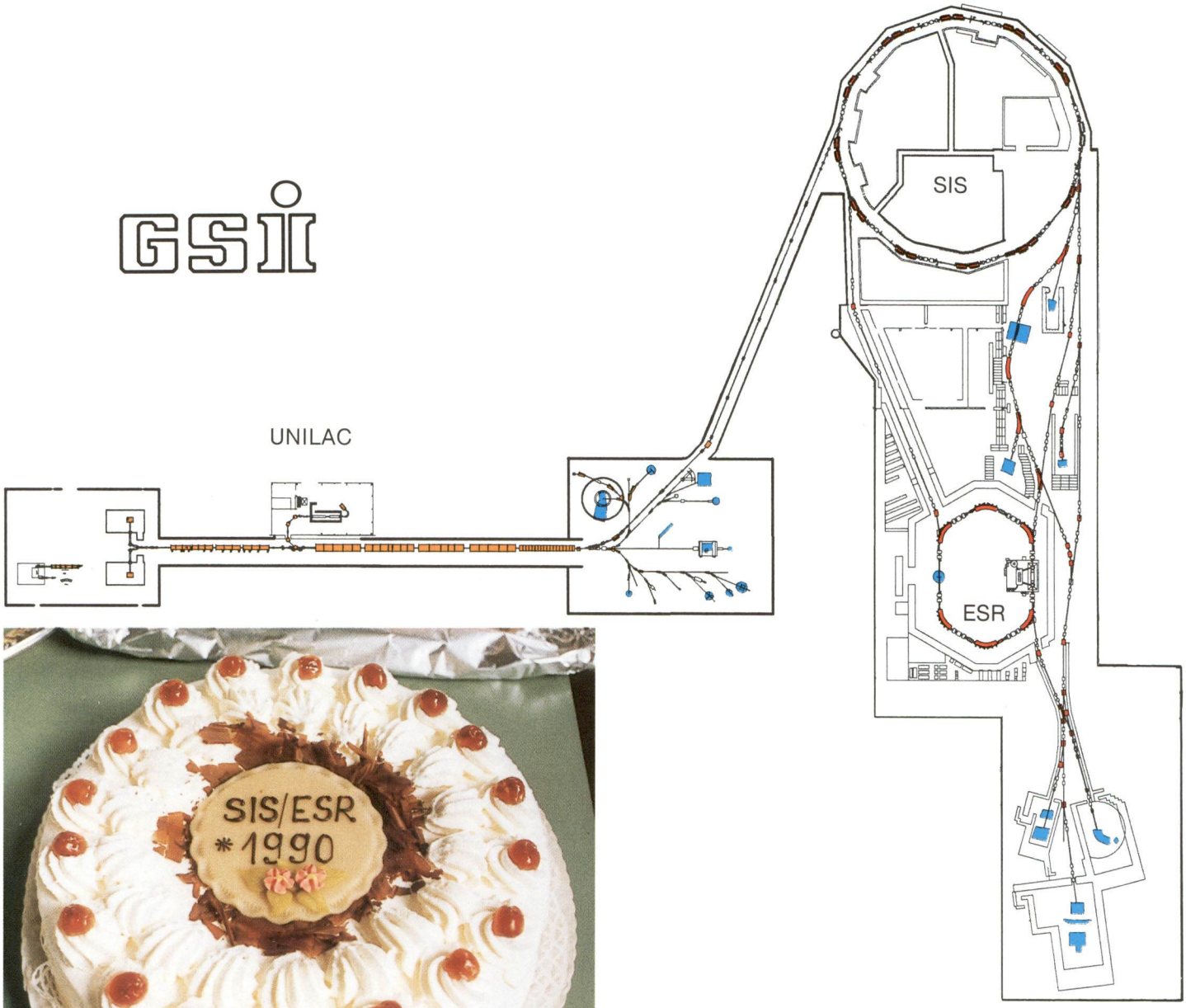








GSI





Herausgeber: Gesellschaft für Schwerionenforschung GSI
Redaktion: Tim Sann, Günter Siegert
Verantwortlich für den Inhalt: Paul Kienle
Gesamtgestaltung: Tim Sann
Fotos: Achim Zschau, Gabi Otto, Karl Peters, F. Stang, Sakae Shimizu
Raumkonzeption und Gestaltung: Margarete Prange
Kunstobjekte: Vera Röhm
Druck: Roetherdruck Darmstadt
© GSI Gesellschaft für Schwerionenforschung mbH
Postfach 11 05 52 · Planckstraße 1 · D-6100 Darmstadt

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9122110
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: STEWART, William D.P.: CHIEF SCIENCE ADVISOR, LONDON

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 07/02/91

SUBJECT: PROPOSAL THAT THE FIRST POST-OCTOBER 1991 MEETING TAKE PLACE IN THE UNITED KINGDOM AT A MUTUALLY CONVENIENT TIME IN 1992.

****

DIRECTORATE ASSIGNED: D. Allan Bromley

STAFF ASSIGNED:

ACTION REQUIRED: AS NECESSARY

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 07/26/91 STAFF DUE DATE

DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO:
INTERNATIONAL/POLICY

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 07/12/91

DEPT RECEIVED:

FILE: pDAB-MEMBERSHIP, CARNEGIE*INTERNAT'L

RECEIVED
9 P 4 : 48
OFFICE OF THE
DIRECTOR

With the compliments of

THE COUNSELLOR
(SCIENCE and TECHNOLOGY)

A W R ALLCOCK

BRITISH EMBASSY
WASHINGTON, D.C.

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 071-270 0259

From the Chief Scientific Adviser
Professor William D. P. Stewart, FRS., FRSE.

W0887

Dr Allan Bromley
The Assistant to the President
for Science and Technology
The White House
Washington DC
USA

July 2, 1991

Dear Allan,

I am delighted that the Carnegie Commission has been generous enough to host the second meeting of G7 and Soviet science ministers and advisers in October. This should reinforce the group's future effectiveness.

We agreed at Mount Kisco in February that the location of future meetings should, in principle, rotate. As I mentioned to you recently, I would like to propose that the following meeting should take place in the United Kingdom at a mutually convenient time in 1992. Early summer, May or June, might be an agreable period. Can you take this as an invitation to host the first post-October 1991 meeting in the UK. We could lay on a good show. We could of course discuss the precise timing.

With very best wishes.

Yours ever
Bill.

PROFESSOR WILLIAM D P STEWART

THE WHITE HOUSE

WASHINGTON

July 24, 1991

Dear Bill:

It is good to know that you will be attending the Mt. Kisco meeting in early October and Bill Golden has told me of his very pleasant and productive discussions with you.

I must say that I will be delighted to support your invitation that the next meeting of the group take place in the United Kingdom at a convenient time in 1992 and I agree that May or June would be entirely appropriate. This is something that I would assume the group would wish to decide in a collegial fashion but I am confident that the group will indeed be happy to accept your invitation.

I hope that all goes well with you and look forward to the possibility of seeing you in the not too distant future in London. I shall be in touch with your office as soon as my travel plans become a little more definite, but it now looks as though the first week in August is the target date for a quick visit to London, Paris, and Bonn.

One of the things that I would particularly like to discuss with you at that time would be topics which you feel appropriate for inclusion in the agenda of the October Mt. Kisco meeting.

With warmest best wishes,

Sincerely yours,

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

Professor William D. P. Stewart
Chief Scientific Adviser
Cabinet Office
70 Whitehall
London SW1A 2AS
England

Wrote Carla quickly! Looking forward to seeing you in Glasgow. DAB

Sara,

This needs a pro-forma reply. Substantive letters from Tom → and Gene → have already gone out. They just have to be re-packaged. Thanks JM

Document Originally
Attached to
Following Page

Bill Weyrauch
Coordinate
w/ Gene Wong,
who should've
prepared draft.
Needs interagency
clearance.
JM
7/3/91

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9121939
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: MURATA, Ryohei: EMBASSY OF JAPAN

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 6/25/91

SUBJECT: A COPY OF A LETTER FROM MR. TARO NAKAYAMA, MINISTER FOR FOREIGN AFFAIRS OF JAPAN CONCERNING NIPT.

****

DIRECTORATE ASSIGNED: INTERNATIONAL/POLICY Bill

STAFF ASSIGNED:

ACTION REQUIRED: COMMENT TO DAB

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: 07/08/91

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

CLOSED

OSTP RECEIVED: 07/01/91

FILE: P-INTERNATIONAL

DEPT RECEIVED:

1940

EMBASSY OF JAPAN
WASHINGTON, D. C.

RECEIVED
91 JUL 1 P12:30
OFFICE OF THE
DIRECTOR

June 25, 1991

Dear Dr. Bromley:

I have the honor to transmit to you, enclosed herewith, a copy of the letter from Mr. Taro Nakayama, Minister for Foreign Affairs of Japan.

Allow me to extend my warmest regards.

Sincerely yours,

Ryohei Murata
Ambassador of Japan

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

Jan Ratchford
to comment

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04a. Letter	To: Allan Bromley From: Taro Nakayama Re: New Information Processing Technology (1 pp.)	6/25/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Sara Bowden

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

August 2, 1991

TO: **ATTENDEES AT THE JULY 1, 1991 MEETING ON NIPT**

FROM: **EUGENE WONG** EW

SUBJECT: **Attached Letter from Takao Hirosawa**

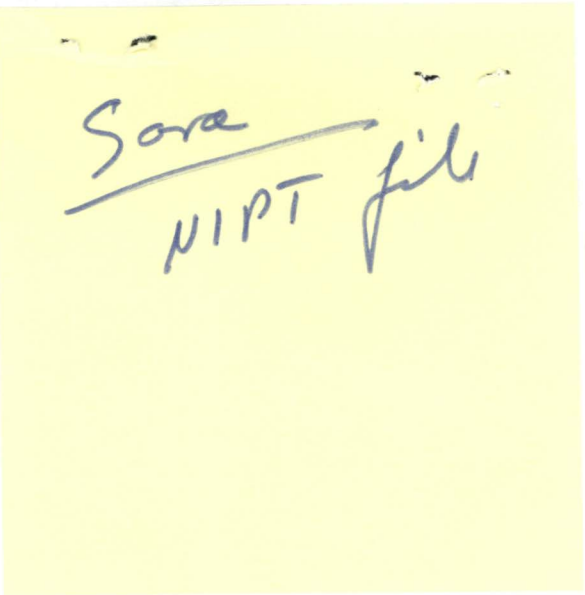
Attached is the response from Mr. Hirosawa to my letter of July 12, which you had the opportunity to review.

Review of NIPT status and preparation for Mr. Mikami's forthcoming visit will be topics of discussion at the interagency meeting on Monday, August 19, 1:30-3:00 p.m., Room 180 OEOB. I urge that each agency be represented by an alternate should its principal not be able to attend this meeting; please advise Sally Sherman at (202) 395-3902.

Attachment

DISTRIBUTION:

Phillip Agress
William Booher
John Boright
Harry Broadman
Todd Buchholz
Y.T. Chien
Sarah Cooper-Hall
Alexander DeAngelis
Phyllis Genther
Lawrence Goldberg
Patricia Hanigan
Norman Kreisman
Richard J. Linn, Jr.
John McPhee
Torkel Patterson
Irene Peden
Arati Prabhakar
Stephen Squires
Linda Staheli
Jonathan Streeter
Daniel H. Taft
William Whyman



Document Originally
Attached to
Following Page

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04b. Letter	To: Eugene Wong From: Takao Hirosawa Re: New Information Processing Technology (2 pp.)	7/26/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04c. Letter	To: Takao Hirosawa From: Eugene Wong Re: New Information Processing Technology (2 pp.)	7/12/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

OSTP STAFFING SHEET

SUBJECT: Nakayama Letter

ORIGINATOR: Bowden / Rosell PHONE: 73960

DATE ORIGINATED: 8/21/91 DATE DUE: 9/3/91 CORR TRACKING NO.: 9121939

EXTERNAL COORDINATION:

		COMMENTS	DATE
5	DIRECTOR		
4	CHIEF OF STAFF KY concur		8-21-91
—	GENERAL COUNSEL		
3	EXEC. ASST.		

ACTION REQUESTED: Please return to Donna Coleman for mailing.

	COORDINATION		DATE	COMMENTS
	Henderson, D. A.	Concur ____ Nonconcur ____		
	Phillips, W.	Concur ____ Nonconcur ____		
1	Ratchford, J. T.	Concur ✓ Nonconcur ____	8/21/91	
2	Wong, E.	Concur ✓ Nonconcur ____	8/21/91	
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		
		Concur ____ Nonconcur ____		

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04d. Letter	To: Taro Nakayama From: Allan Bromley Re: Response to 6/25 letter (1 pp.)	9/3/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9121992
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: CHRISTIANSEN, Donald: SPETRUM

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 06/25/91

SUBJECT: A COPY OF IEEE SPECTRUM'S SPECIAL ISSUE ON "ASIAPOWER: TECHNOLOGY'S PACIFIC TILT".

****

DIRECTORATE ASSIGNED: STAFF ASSIGNED:

ACTION REQUIRED: STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: INTERNATIONAL/POLICY
D. Allan Bromley
Steve Olson

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS: Enclosure to International.

CLOSED

OSTP RECEIVED: 07/08/91 FILE: P INTERNATIONAL
DEPT RECEIVED:

IEEE
SPECTRUM

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. 345 EAST 47TH STREET, NY, NY 10017-2394 (212) 705-7555 FAX (212) 705-7453

1992

RECEIVED

Donald Christiansen
Editor and Publisher

June 25 JUL 9 1 P12 : 56

OFFICE OF THE DIRECTOR

Mr. D. Allan Bromley, Ph.D.
Assistant to the President
for Science and Technology and Director
Office of Science and Technology Policy
New Executive Office Building
725 17th Street, N.W.
Washington, D.C. 20506

Dear Dr. Bromley:

We hope you will find IEEE Spectrum's enclosed special issue on "Asiapower: technology's Pacific tilt" to be useful and informative. We believe the issue to be the most complete assessment yet of electrotechnology's role in firing the spectacular ascent of Asia's Pacific Rim.

As seen by journalists and industry and government experts in the area, the issue describes how Japan and the four "tigers" are exploiting electrotechnology to create a tripolar world economic structure by the end of the decade. It also discusses how fierce competition among the immense region's advanced and emerging industrialized economies is intensifying the world's Pacific tilt.

As you may know, IEEE Spectrum is the flagship publication of the Institute or Electrical and Electronics Engineers, Inc., the world's largest technical professional organization with more than 300 000 members in over 130 countries. Among other recognition, Spectrum has been honored as a finalist in the National Magazine Award competition 10 times in the last 14 years. Spectrum won the Award three times.

If you would like additional copies of the special issue for your associates, simply send us their names and addresses, and we will mail them a copy promptly.

Cordially,

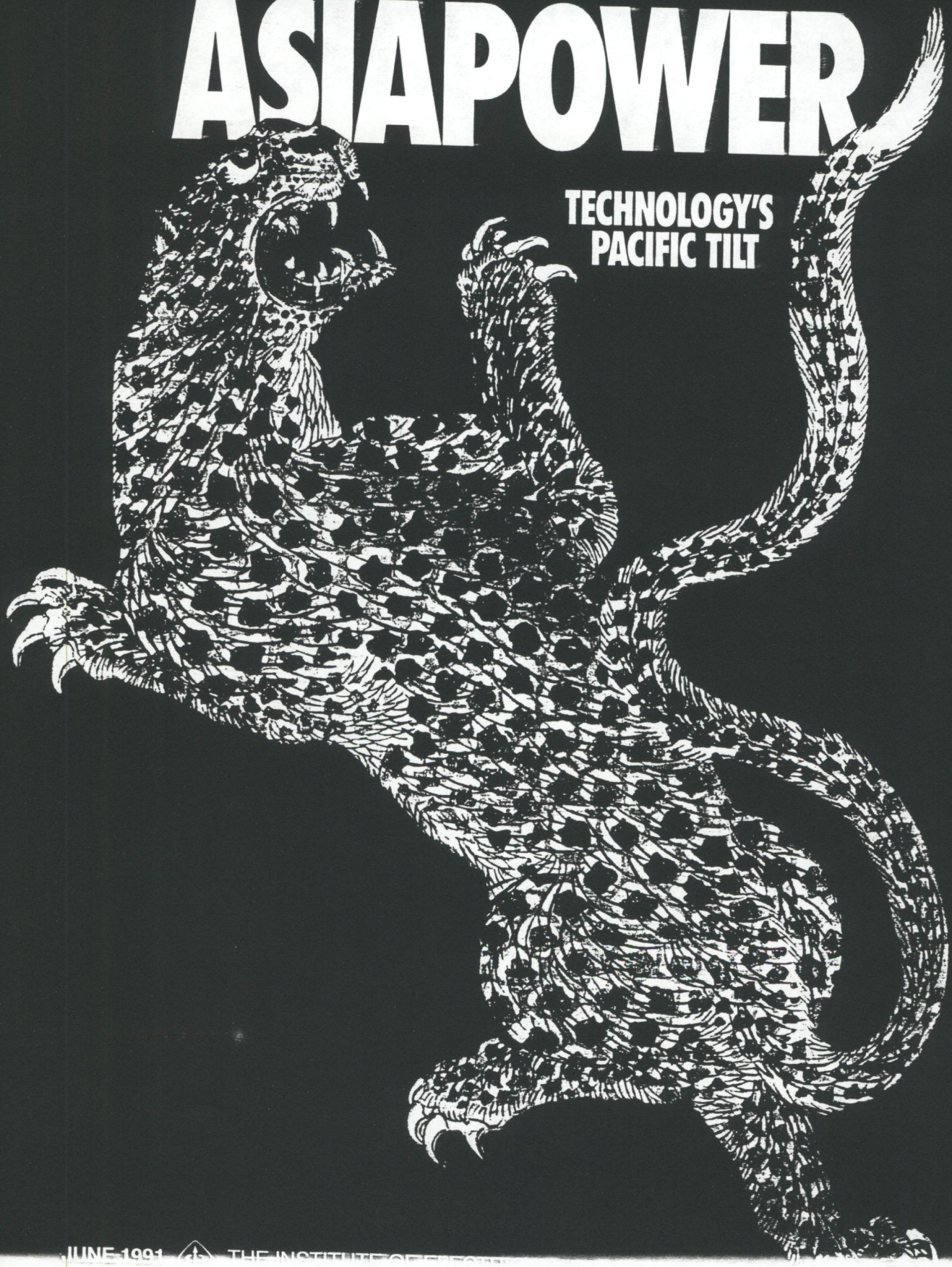
Donald Christiansen

DC/nh

IEEE SPECTRUM

ASIAPOWER

TECHNOLOGY'S PACIFIC TILT



"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9121889
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

****

FROM: GUPTA, J.P.: SCIENCE COUNSELLOR, EMBASSY OF INDIA

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 06/20/91

SUBJECT: A WRITE-UP ON THE NEW PRIME MINISTER AS RECEIVED ON WIRE SERVICES 06/20/91. ENCLOSED, "INDIA'S NEW PRIME MINISTER MR. P.V. NARASIMHA RAO".

****

DIRECTORATE ASSIGNED: STAFF ASSIGNED:

ACTION REQUIRED: STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS:

OSTP RECEIVED: 06/26/91 FILE: INTERNATIONAL - INDIA
DEPT RECEIVED:

9121889

विज्ञान उपदेष्टा
भारतीय राजदूतावास

SCIENCE COUNSELLOR
EMBASSY OF INDIA

RECEIVED
91 JUN 26 P 4:37
OFFICE OF THE DIRECTOR

TEL: (202) 939-7072
(202) 939-7073
TELEX: 440365
FAX: (202) 939-7027
2107 Massachusetts Avenue, N.W.
Washington, D.C. 20008, U.S.A.

No WAS/SW/J-2/91

June 20 1991

Dear Dr Bromley,

During the last couple of months, we had sent to you a brief write up on Dr P. Rama Rao, who took over as Secretary, Department of Science & Technology(DST), and Dr S.K. Joshi, who took over as Director General, Council of Scientific & Industrial Research (CSIR). Both these organizations interact strongly with U.S. bodies to promote science cooperation between US and India.

Both the DST and CSIR have always derived their inspiration from the Prime Minister, who as Head of Government, has always played a key role in the furtherance of science & technology. The successive Prime Ministers' commitment is further evident from the fact that they have always retained the Ministry of Science & Technology under their direct charge. The new Prime Minister, Mr P.V. Narasimha Rao, will also play an important role, more so since S&T are to be used to solve India's problems and to provide a higher quality of life for her people.

I am honored to share with you a write-up on the new Prime Minister as received on wire services on June 20, 1991. This shows, amongst other things, that he is a Science & Law graduate, a linguist of great renown and has handled, amongst others, the Ministry of Human Resources Development that includes Education as well. He had played a key role in the New Policy of Education and the budget for education at all levels, including higher education and adult literacy had gone up significantly during his tenure.

Secretary, Department of Science & Technology, and Director General, Council of Scientific & Industrial Research will brief him about their respective organizations' work. The joint US-India programs will certainly be a significant part of their briefings.

With best wishes,

Sincerely,

J P Gupta

(Dr J.P. Gupta)

Dr D. Allen Bromley,
Assistant to the President for
Science & Technology & Director of
the Office of Science & Technology
Policy, White House Office of
Science & Technology Policy,
Old Executive Office Building,
Room 360,
Washington DC-20500.

INDIA'S NEW PRIME MINISTER MR P.V. NARASIMHA RAO

A veteran statesman, Pamulaparti Venkata Narasimha Rao, is a scholar politician set to become India's ninth Prime Minister and the first from South India.

A believer in the politics of consensus, Rao was unanimously elected Leader of the Congress-I Parliamentary Party amid intense speculation about who will lead the Party in the Lok Sabha (The Lower House of the Parliament) after former Prime Minister Rajiv Gandhi's assassination.

Rao is a man of powerful socio-economic and political convictions and has five decades of administrative and political career.

Popularly known as 'PV', the 70year old Rao is the seniormost Member of the Congress Working Committee who brings to his new position as wealth of experience as a scholar, lawyer, journalist, linguist and a successful administrator.

He has distinguished himself in every field of interest ranging from literature to diplomacy and headed key portfolios in the government of both Indira Gandhi and Rajiv Gandhi.

Chosen Congress-I President after Rajiv Gandhi's assassination, and a Member of All India Congress-I Committee, Congress Working Committee and the Party's Parliamentary Board for the past two years, Rao earned fame for his Land Reform measures as Chief Minister of Andhra Pradesh.

Born on June 28, 1921, into an agriculturist family at Karimnagar in the southern Indian state of Andhra Pradesh, Rao studied at Osmania, Bombay and Nagpur universities and got his Bachelors Degree in Science and a Degree in Law (LLB).

Rao started his political career as a Congress activist during the freedom movement in the erstwhile Hyderabad state. He was General Secretary of the Hyderabad State Congress Committee and became its Vice-President in 1956.

He was elected to the Andhra Pradesh Legislature Assembly for the first time in 1957 from Manthani constituency in Karimnagar district.

He held a wide range of ministerial posts during the two decades he served in the Legislature. This included a two-year tenure as Chief Minister from 1971-73 when he succeeded Congress stalwart Brahmanand Reddy.

While implementing a number of revolutionary measures, including his Land Reforms Policy, as Chief Minister, he saw to it that in the 1972

.....2/-

elections, nearly 75 per cent of the Congress tickets were given to the candidates from the scheduled castes, scheduled tribes and backward classes.

These measures won for the party an impressive number of 220 seats in an Assembly of 270.

Rao moved to Delhi as All India Congress Committee General Secretary in 1975 and continued in that position till 1976. During that period, he played a key role in drafting the Political, Economic and Foreign Policy Resolutions for the All India Congress Committee session at Kamagatunagar in Chandigarh.

In the 1977 general elections, he was one of the few Congress heavy weights to withstand the Janata 'wave' and enter the Lok Sabha. He was elected from the Hanmakonda Lok Sabha constituency.

Since then Rao has held several important ministerial posts, including Defence, External Affairs, Home and Human Resources Development portfolios at the Centre.

An accomplished linguist, fluent in many languages, Rao was made Minister for External Affairs in the Indira Gandhi Cabinet when the Congress-I came back to power in 1980.

He was moved to the Ministry of Home Affairs (Interior) in July 1984, a month after 'Operation Bluestar', an army operation to flush out Sikh militants from the Golden Temple in Amritsar. He continued in that post till Rajiv Gandhi constituted his Cabinet after the Party's victory in the Eighth Lok Sabha elections in December 1984.

Rao first served as Federal Minister for Defence in the Rajiv Gandhi Cabinet before he was given the Human Resource Development portfolio. He headed the newly formed Ministry, a synthesis of several ministries.

In June 1988, Rao was shifted to the Ministry of External Affairs and held the post till Congress-I was voted out of power in the 1989 general elections.

A versatile personality, Rao is a receipient of 'Sahitya Ratna' Degree in Hindi literature and is actively associated with the 'Dakshin Bharat Hindi Prashar Sabha' (Society for Hindi in South India).

As a lawyer, he participated in the Vandematram Movement in the erstwhile Hyderabad State under the leadership of Swami Ramananda Tirth.

.....3/-

Author of many fictions in Hindi, Marathi and Telugu, Rao has been the Chairman of the Telugu Academy. He has also translated many books into Telugu and Hindi.

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9121826
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: SHIMAMOTO, Yoshio

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 06/19/91

SUBJECT: RE: PRELIMINARY COMMENTS ON, "REPORT OF THE RESEARCH COMMITTEE ON NEW INFOMRATION PROCESSSING TECHNOLOGY".

****

DIRECTORATE ASSIGNED:

STAFF ASSIGNED:

ACTION REQUIRED:

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY
INDUSTRIAL

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS: Enclosures to DAB.

CLOSED

OSTP RECEIVED: 06/21/91

FILE: B-INTERNATIONAL

DEPT RECEIVED:

RECEIVED

91 JUL 16 A10 : 54

OFFICE OF THE DIRECTOR

JULY 12, 1991

DEAR ALLAN -

YOU OBSERVE THAT THE ENCLOSED IS IN NO SHAPE TO BE SENT TO YOU. HOWEVER, AFTER THREE DAYS OF WAITING AND THEN TOLD THAT IT IS READY LATE FRIDAY AFTERNOON, I HAVE DECIDED TO SEND IT TO YOU AS IS RATHER THAN WAIT UNTIL MONDAY AFTER CORRECTIONS ARE MADE.

SORRY ABOUT THE SNAFU.

YOSHIO

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
05. Letter	To: Allan Bromley From: Yoshio Shimamoto Re: MITI's Research Committee Report (5 pp.)	7/12/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

ATTACHMENT: A

A Crisp Look at the Fuzzy Buzzword

Tempting as it is, we will try to resist "fuzzy" puns in this look at Japan's latest techno-fad. As shops across the nation sprout fuzzy fridges, air conditioners, washing machines and vacuum cleaners, journalists and copywriters have exploited every corny quip imaginable. The verbiage threatens to obscure what promises to be a useful approach to solving all sorts of sticky technological problems.

First, for those who are still unclear on fuzzy theory and how it applies to today's technology, a quick catch-up.

"Fuzzy logic" is an offshoot of modern mathematical theory first put forward by Professor Lofti Zadeh of the University of California at Berkeley in 1965.

Departing from the ordinary true/not-true precision of ordinary mathematics, "fuzzy logic" allows descriptions of events and conditions in the vague ways that humans see them. "A little more," "too hot" and "almost round" are all pretty simple concepts to us, but they're incomprehensible in the black/white, yes/no world of digital control computers. With fuzzy systems, however, computers can be trained to "see in shades of gray," paradoxically making them more precise, flexible and efficient.

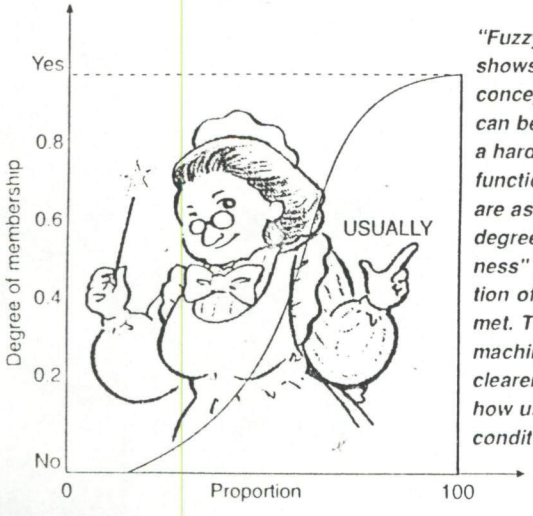
Members of the Fuzzy Set

The theory isn't as vague as it sounds. The basic concept is the "fuzzy set," as opposed to the conventional "crisp" mathematical set. A crisp set is sharply defined; an object is either a member of the set or not. In a fuzzy set, the transition from membership to nonmembership is gradual, and objects are assigned varying degrees of membership. Using this approach, it becomes easier to describe vague sets like "blond men" and "compact cars."

By studying human reactions and using them to assign values to objects and situations as a series of "fuzzy rules," human expertise and flexibility can be transferred to machines. Unexpected situations that cause normal systems to halt in confusion can be handled more flexibly by fuzzy systems, which also makes programming simpler and cheaper. Some systems are already outdoing their human teachers.

Over the past decade, Japanese manufacturers have begun to incorporate "fuzziness" into a succession of electronic products. The fuzzy set of experiences that guide the gentle hands of Japan's veteran subway motormen was incorporated into an automatic braking system for the Sendai urban rail system. New washers make fuzzy decisions as to how much scrubbing clothes really need. Vacuums decide how hard to suck, and so on.

Useful gadgets like these have sparked consumer interest, but researchers are quickly moving on to bigger game.



"Fuzzy Sensei" shows how a vague concept like "usually" can be converted into a hard mathematical function. Conditions are assigned higher degrees of "usually-ness" as the proportion of the criterion is met. This gives the machine a much clearer "idea" of just how usual each condition is.

Fuzzy the Banker

The MITI-affiliated Laboratory for International Fuzzy Engineering Research (LIFE), set up in 1989, is working on a fuzzy-logic system to assist foreign-exchange traders. The system will incorporate the expertise of veteran dealers, and respond to various financial data and news inputs with suggestions for buying or selling.

Conventional computer decision-making systems for exchange dealing are based on statistical models, and can't cope with imprecise inputs like the deliberately fuzzy statements issued by central bankers. But in the real world, it is intuitive interpretations of this kind of news that move markets. Within six years LIFE hopes to perfect a system that can combine hard and fuzzy data as well or better than humans.

Fujitsu, a major computer maker, is using a computer-aided instruction (CAI) system that employs fuzzy logic to train software engineers. Where standard CAI systems teach lessons in a fixed order, Fujitsu's can furnish instruction in the order that best suits the student.

Fuzzy logic helps assess quiz results. Standard CAI systems can only decide whether the student passed or failed. Fuzzy logic allows the computer to make judgments like "she should have done better" or "he made some lucky guesses" in much the same way a human teacher might. This way, the computer can determine which concepts the student needs to study further. In some cases, the computer may decide the student knows the material despite a mediocre score; in others, the computer may believe a student was merely lucky (or cheated) and prescribe further study.

Fuzzy the Weatherman

Because many of the clues that could predict weather or earthquakes don't slot neatly into crisp sets, Japan's Science and Technology Agency has launched a five-year, ¥1-billion research project to see how fuzzy logic could help.

Meanwhile, at Kumamoto University researcher Takeshi Yamakawa has developed a computer-chip set designed to process fuzzy data faster. Yamakawa's design consists of two elements, a "rule" chip and a "defuzzifier" chip. The rule chip can handle a million calculations per second to infer correct answers from built-in fuzzy-set rules. The defuzzifier chip converts those answers into analog numbers. NASA has asked Yamakawa for permission to use his chip technology to help control docking maneuvers in the space shuttle.

But for Japanese consumers, the most famous member of Japan's fuzzy set is "Fuzzy Sensei" (teacher), a cartoon granny figure who touts Sanyo's fuzzy appliances.

ATTACHMENT: B

SCIENCE AND TECHNOLOGY

The generation game

TOKYO

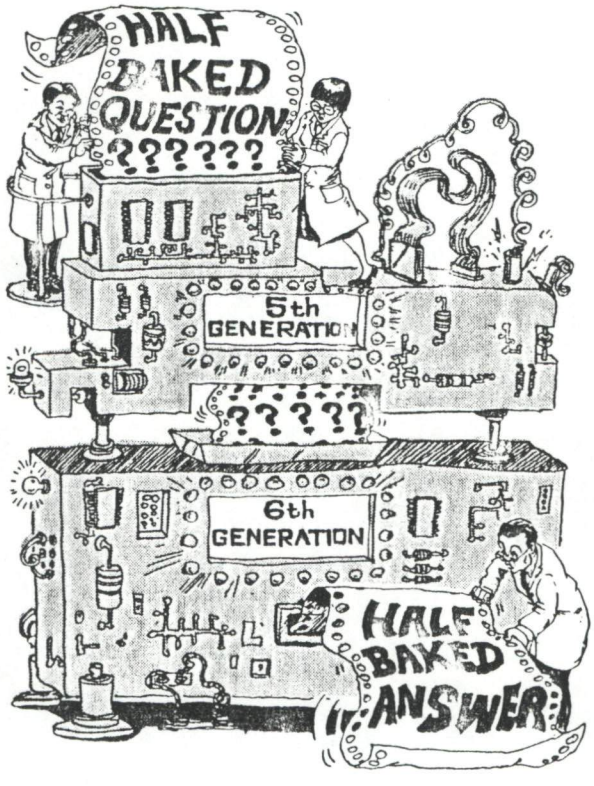
AFTER ten years and ¥60 billion ($440m) of taxpayers' money, Japan's fifth-generation computer project—aimed at developing computers able to "infer" complete answers from half-baked questions—will soon be wound up. The collaborative project, the first in recent years to be financed entirely by the Japanese government, was conceived to help local computer firms "leapfrog IBM". But compared with the government's previous catch-up programmes for microchips and supercomputers, its attempt to nurture an infant "inference industry" has been a flop.

The money has not been entirely wasted. Corporate Japan has kept a foot in the door of "massively parallel" processing, allowing it to look on with understanding as dozens of young American firms with novel computing inventions have scampered off through the doorway and down various passages. More important, the 100 or so computer scientists assembled over the past decade at the Institute for New Generation Computer Technology (ICOT) have acquired skills needed to design the latest artificial-intelligence (AI) hardware and the software to make it work. They will go back to their government and corporate laboratories and spread the AI gospel.

Still, measured against its proclaimed aims, the programme failed. So what should come next? More of the same, according to the Ministry of International Trade and Industry (MITI). This time, though, MITI wants to include the one computer group whose absence last time did more than anything to damage its fifth-generation project. Top of the list of companies that it wants to sign up for its new sixth-generation project is IBM. Two other foreign computer makers, AT&T and Siemens, will also be invited to join, along with nine Japanese firms.

Back in 1982 the men from MITI imagined that the proposed "inference engine" would hand Japanese computer firms a winner. What they never bargained for was the reluctance of Fujitsu, Hitachi, NEC and other Japanese computer companies to abandon their slavish following of IBM and go out on a limb with a computer concept all of their own. Without the confidence of knowing that the world's leading computer manufacturer was also making a big commitment to inference technology, the Japanese companies stayed with the tried and true. "Industry tends to stick to past experiences", moans ICOT's director, Kazuhiro Fuchi, and "they still want to follow IBM."

It was ambition that made the fifth-generation project try to leapfrog IBM rather than bring it in. Ambition hurt it in other ways, too. The project tried to develop an all-purpose AI machine—a computer that could, in effect, mimic the processes of human thought, which provide an uncanny ability to make guesses and muddle through ignorance. A prototype was eventually built using 64 microprocessors wired up as a parallel array. The machine could design a complicated microchip, analyse an English sentence, provide legal advice based on previous cases, and play a handy game of "Go". Those are all specialised, if noble, tasks; the computer organised to perform them is a far cry from the all-purpose AI machine that ICOT originally dreamed of. By the time the fifth-generation project ends next March, ICOT hopes to have something bigger, if not a great deal better: an array processor with 1,000 elements comparable to some of the "massively parallel" speed demons in the United States.



Officially called the New Information Processing Technology (NIPT), the sixth-generation project will take over where ICOT's work leaves off. Current thinking is that a new institute will be established for NIPT under the direction of Shun-ichi Amari, a leading computer scientist at Tokyo University. Setting the priorities will be a research committee that includes R&D bosses from NTT, Fujitsu, Hitachi, NEC, Mitsubishi Electric, Toshiba, Sharp and Oki as well as ICOT.

The lesson learnt from the past ten years is that ICOT bit off far more than it could chew. By contrast, NIPT will have more modest goals. The ultimate aim is still to "process information intuitively without the need for programs." But the task is to be broken down into more definable AI questions. Like how to make a computer work with ambiguous information? Or how to get it to adapt to change and generalise from its own experience? Or how to make it tackle monstrously large problems by discarding unnecessary data?

The kind of test question that Japanese officials cite as an example of sixth-generation computing is how to chose ten out of 100 stockmarket shares for maximum return. Sounds trivial? A conventional mainframe computer capable of 100 MIPS (millions of instructions per second) would take 30,000 years to come up with an answer. A good fund manager working with pencil, paper, a pocket calculator and well trained intuition might take a week or two. If NIPT ever manages to do its job, the task would be narrowed down to minutes.

The key will be endowing a computer with the ability to learn. That means looking at the way the brain works. At one end of the scale, the NIPT team intends exploring stacks of silicon wafers containing up to a billion interconnected neuron-like elements. At the other extreme, research is to tackle the basics of pattern recognition. If it all sounds familiar, it is. Wherever scientists pursue the holy grail of artificial intelligence,

the same topics are on their agenda. The one difference that NIPT could bring is an extraordinary proficiency in optical microchips—a technology that half a dozen big Japanese laboratories have been honing to perfection in a bid to give machines a child-like ability to read. Japanese researchers have also had more practical experience than their colleagues abroad in exploiting "fuzzy" logic with its capacity for human-like judgments (and for spurring technology-minded Japanese consumers on to excited buying sprees).

As a sprat to catch the American mackerel, MITI is now offering to share the patents resulting from the joint research with foreign participants. Officials say they are even prepared to revise Japan's patent law so that foreign firms can benefit more from participating in the NIPT project. This month, MITI is to establish a committee of experts to determine the research priorities and the contributions expected from participants in the sixth-generation project. The aim is to launch the project in April 1992. The amount of government money has yet to be determined.

Domesticating mushrooms

Muck and magic

A MUSHROOM can be a valuable thing. The autumnal woods of Italy, France and many other places are full of wandering figures in search of ceps (or porcini), chanterelles, blewits, horns of plenty, shaggy inkcaps, puffballs, oyster mushrooms, honey fungus, hedgehog fungus and the like. In Poland pickers make a living supplying wild fungi to markets. In Scotland a walk in the woods can turn a profit if you find chanterelles to sell to the village shop. In Italy pasta is stuffed with porcini and exported.



A small family business

After a decade that saw salmon domesticated, kiwi fruits tamed, venison farmed and quails' eggs made cheap, it is not surprising that exotic fungi are next. The ordinary domesticated mushroom is being joined by an increasing variety of its wild cousins. Dried shiitake mushrooms are now sold in the United States, and fresh oyster mushrooms in Britain. About five more species are grown commercially, mostly in Asia. But domesticating wild mushrooms is not proving easy. Most of those who have tried are pessimistic. They are up against some intransigent biology.

The problem is the unique way that fungi grow. The bit you see and eat is merely the fruiting body. Most of the fungus is a tangle of tentacles called the mycelium. This is not arranged into cells with nuclei, as most other creatures are. Instead the tentacles spread into their food—be it dead wood, mucky soil or stale bread—and move their nuclei, and the rest of their contents, to the places where growth is going on.

Many fungi live in the soil, as partners to plants. There is a bargain between the two. In exchange for sugar from the plant, the fungus passes on minerals and nutrients that it has extracted from the soil. This "mycorhizal" habit hinders would-be domesticators, for the fungus cannot live without the plant. Truffles, for example, have signed up with the roots of oak trees. After many attempts at cultivating truffles, the French have fallen back on planting oaks in suitable places and inoculating their roots with the crop—a kind of ranching. A retired immunologist in California has done a little better. Moshe Shifrine is now producing 60lb (27 kilograms) of miniature truffles every week, grown in a laboratory medium; the California Truffle company turns them into oil and paste.

Getting the fungus to grow is only half the battle; you must also make it fruit. Although ceps are mycorhizal, their mycelium can be grown on compost. But it will not produce the edible fruiting bodies. Common mushrooms are induced to fruit by being "cased" with moist peat and chalk while the humidity and carbon-dioxide concentration are increased. Oyster mushrooms fruit when the temperature is suddenly dropped and the light turned up.

A company in Michigan called Company M has recently patented a fruiting method applicable to morels; Domino's Pizza has licensed the patent, and a pilot plant produces 300lb (136kg) a week. But finding the right recipe to induce fruiting is more a matter of trial and error than well-reasoned science; the errors are not particularly informative, which makes progress hard. David Wood, of Britain's Horticulture Research International (the former Glasshouse Crops Research Institute), says only long-term studies could find the fruiting formula for other wild mushrooms. It is hard to obtain the money for such work—even though Britain, with its imperial legacy of exotic agronomy, is rich in mycological expertise.

An alternative to domesticating wild mushrooms would be to improve domesticated mushrooms. But selective breeding is almost impossible. Ordinary mushrooms are not much given to sex, so different strains cannot be crossed. Instead, Dr Wood and his colleagues are trying to find a way of injecting genes directly into mushrooms, but that is made difficult by their habit of keeping several nuclei in every cell. The wild mushroom remains curiously unwilling to be tamed.

Muscular dystrophy

A finger in the dyke

BERKELEY, CALIFORNIA

IT IS tempting, but wrong, to think that a disease is vanquished once its genetic origins have been unearthed. In 1986 the defect that leads to Duchenne's muscular dystrophy, the most common inherited muscle disorder, was pinned to a bit of DNA that makes a protein called dystrophin. Before this knowledge can be turned into a cure, scientists need to understand how dystrophin causes the disease. Although its exact role remains shrouded, research is discovering how muscles waste away without it. This research points the way to potential new drugs.

The disease afflicts about one in every 3,400 boys. It causes weakness in the limbs as muscles are gradually supplanted by useless connective tissue, leading to disability and then death—usually before the sufferer passes his mid-20s. In healthy limbs, dystrophin is hooked up to the inside of the membrane which surrounds each muscle cell. Somehow it keeps the cell working. Experiments in which cells affected by Duchenne's muscular dystrophy were fused with nascent healthy muscle cells (known as myoblasts) have succeeded in restoring dystrophin, and some vitality, to the sick cells. But injecting lots of myoblasts into a

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
06. Letter	To: Allan Bromley From: R. R Arndt Re: Visit to the USA (2 pp.)	6/6/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files
WHORM Cat.:
File Location: International: General [4 of 6] [1991]

Date Closed:	5/3/2010	**OA/ID Number:**	62062-002
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

VISIT TO DR D ALLAN BROMLEY

Proposed dates and time for visit by Dr R R Arndt & Dr J D van Wyk, FRD

Tuesday, July 2	08h00 - 09h30
or	11h30 - 12h30
or	
Wednesday, July 3	09h00 to 10h30
or	12h30 onwards

FRD

MISSION

THE FRD'S MISSION IS TO ENSURE THE COST-EFFECTIVE AND BALANCED PROVISION OF HUMAN RESOURCES AND EXPERTISE IN SCIENCE AND TECHNOLOGY TO MEET THE REQUIREMENTS OF THE NATION.

TO FULFIL ITS MISSION THE FRD WILL :

MAINTAIN AND FOSTER RESEARCH EXCELLENCE

SET ITS PRIORITIES ACCORDING TO FUTURE HUMAN RESOURCE REQUIREMENTS

DEVELOP AND ASSIST IN MAINTAINING THE NECESSARY INFRASTRUCTURE IN EDUCATION, RESEARCH AND TRAINING

SELECTIVELY ASSIST IN IMPROVING AND RATIONALISING EDUCATION AND TRAINING AT THE PRIMARY, SECONDARY, TERTIARY AND OCCUPATIONAL LEVELS

ASSIST IN ENABLING DISADVANTAGED COMMUNITIES TO CONTRIBUTE FULLY TO THE POOL OF HUMAN RESOURCES

PROMOTE, DEVELOP AND COORDINATE MULTIDISCIPLINARY AND MULTI-INSTITUTIONAL COOPERATION

ESTABLISH, REINFORCE AND EXPLOIT INTERNATIONAL SCIENTIFIC CONTACT AND COLLABORATION

EVALUATE PARTICIPANTS, PROGRAMMES AND THEIR OUTPUTS

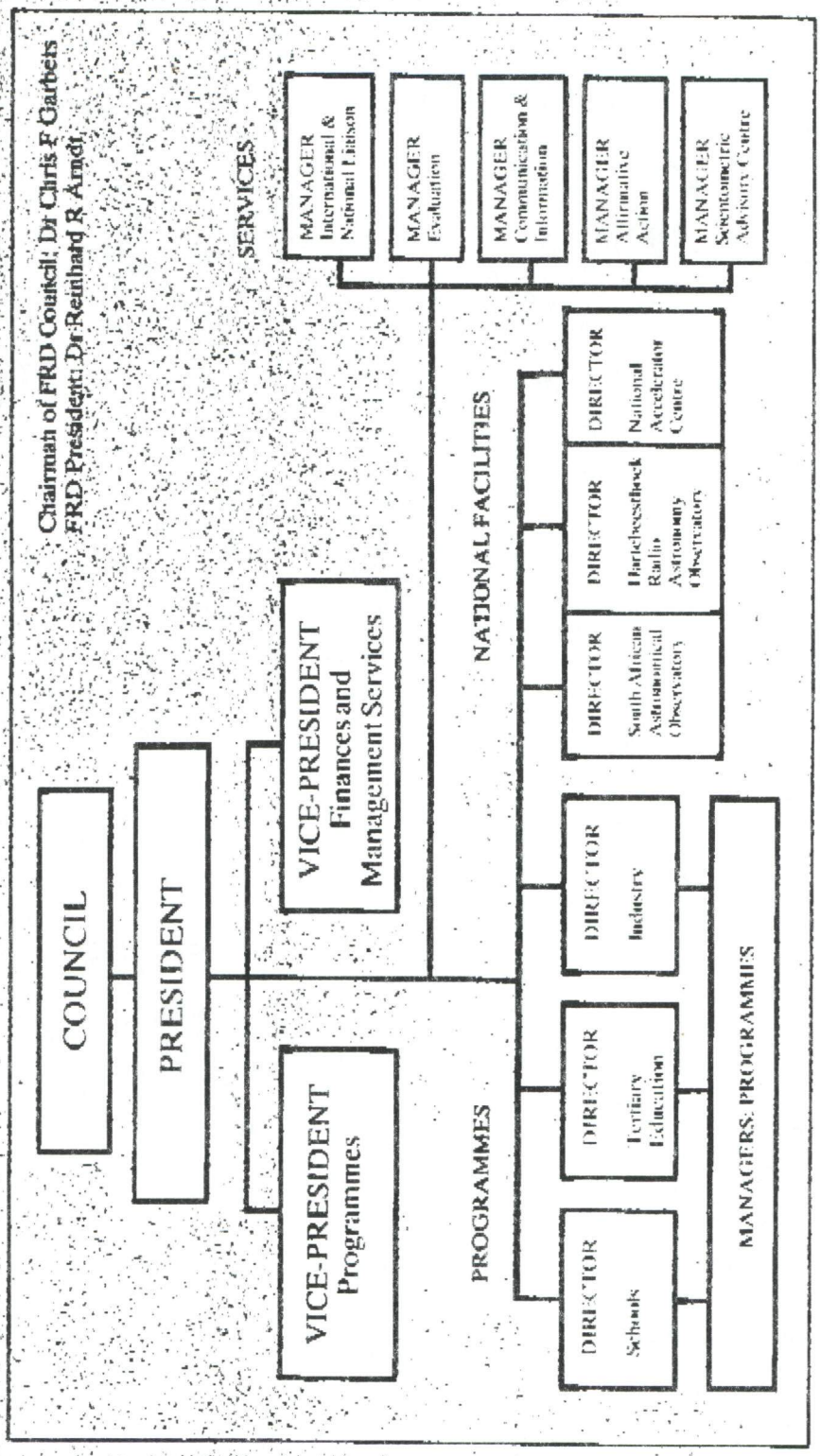
IN ACCOMPLISHING THIS TASK WE BELIEVE IN :

MAINTAINING EXCELLENCE, INTEGRITY AND IMPARTIALITY

RESPONDING RAPIDLY TO THE NEEDS OF OUR USERS

DEVELOPING AND MAINTAINING A HIGHLY MOTIVATED AND GOAL-ORIENTATED ORGANISATION

ORGANISATIONAL STRUCTURE



FOR MORE INFORMATION ABOUT ANY
FRD PROGRAMME OR ACTIVITY
WRITE TO:

FRD INFORMATION
PO BOX 2600
PRETORIA
0001
TEL: (012) 841-4775
FAX: (012) 841-4301

BIOGRAPHY

NAME: Reinhard Richard Arndt

BORN: 3 May 1929 in Bloemfontein, Orange Free State, South Africa

QUALIFICATIONS: Matriculated from Grey College, Bloemfontein, in 1946. BSc (1949), MSc (1953) and DSc (1959), University of the Orange Free State. MBA (1957), University of Pretoria.

ORIGINAL SPECIALITY: Chemistry

LATER INVOLVEMENT: Development of manpower in the fields of engineering and the natural sciences.

CAREER: He started his career at the South African Bureau of Standards in 1955, before taking up a position at the CSIR, South Africa's largest multi-disciplinary research organisation.

He worked at the National Research Council of Canada from 1959-1960 and was a research fellow at the University of Stanford from 1964-1965.

In 1967 he accepted an appointment at the Rand Afrikaans University in Johannesburg where he established the Chemistry Department which he headed for the following twelve years.

During 1972-1973 he visited the ETH in Zurich and was a visiting professor at the University of Cambridge during 1978.

In 1979 he was appointed professor of organic chemistry at the University of Stellenbosch, Cape Province.

Dr Arndt was appointed Deputy President of the CSIR in 1981. With the restructuring of the CSIR in 1984, he became Group Executive of the Foundation for Research Development (FRD), one of the two functional groups of the CSIR. When the FRD gained its independence from the CSIR, Dr Arndt was appointed the first President of this new organisation.

OTHER: His interest in industrial chemistry led to close cooperation in research projects with South African Breweries, AECI, a leading chemical company, and Adcock Ingram, a pharmaceutical research group (1975-1979).

He is a member of several local and international scientific and educational societies and served as Chairman of the South African Academy for Science and the Arts from 1987-1989.

In April 1990 he was honoured with the Claude Harris Leon Award for his significant role in the establishment of the FRD and for the promotion of science in South Africa.

FAMILY: He is married to Aritha and has four daughters

JACOBUS DANIEL VAN WYK was born in Fauresmith, Republic of South Africa, in 1939. He received the M. Sc. Eng. degree from the University of Pretoria, South Africa, and the Degree of Doctor of Engineering (cum laude) from the University of Technology, Eindhoven, Netherlands, in 1966 and 1969.

He worked with the S.A. Iron and Steel Corporation, the University of Pretoria, and the scientific staff of the University in Eindhoven, between 1961 and 1972. From 1971 to the present he has been a full Professor of Electrical and Electronic Engineering at the Rand Afrikaans University, at present, holding a chair in Power Electronics and has been involved in extensive industrial work. He is at present Programme Director of the Electronic Power Control Research Group.

Since 1976 he has annually been appointed visiting professor in Power Electronics at the University of Technology, Aachen, Germany. Since 1989 he is a member of the Graduate Faculty and Adjunct Professor at Texas Tech University, Lubbock, Texas.

Dr. van Wyk is a Fellow of the IEEE, a Fellow of the South African Institute of Electrical Engineers, and a member of the Royal Dutch Institute of Engineers, and has been author or co–author of more than 100 publications. He has been co–recipient of 4 IEEE prize paper awards.

1990-08-01