

ACTIVITIES REPORT

1993-1997

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MISSION

The Foundation promotes, supports and encourages binational cooperation in research, training and capacity building in Science, Technology, Engineering, and Public Health.

In pursuing its goal, the Foundation maintains a multidisciplinary, binational structure, primarily focusing on critical issues of mutual interest and benefit.

It brings together specialists to catalyze the creation of independent, self-sustaining, research and development programs.

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INTRODUCTION

The Foundation was launched in late 1992 as a non governmental body following the initiatives of USA and Mexico academic communities where the University of California UC-MEXUS Program was a catalyzer. The original Board of Governors consisted of 10 members, 5 nominated by each country. The original nominees and their nominating organizations were:

Mexico

Guillermo Soberón (Coordinator of the Presidential Science Advisory Council) was elected President 1993- 1994.

Fausto Alzati (General Director of CONACYT)

Mauricio Fortes (representative of the Mexican Academy of Sciences, then Academy of Scientific Research)

Adolfo Martínez Palomo (representative of the Mexican Academy of Medicine)

Ismael Herrera (representative of the National Academy of Engineering)

USA

Bruce Babbitt (appointee of the House of Representatives Committee on Space, Science and Technology)

Beryl Simpson (appointee of the Smithsonian Institution)

Ernest Eliel (representative of the National Academy of Sciences)

James Wyngaarden (representative of the Institute of Medicine)

Norman Abramson (representative of the National Academy of Engineering)

The first Executive Director was, until July of 1996, Gerardo Bueno Zirión.

In early 1993, \$2,000,000 were obtained from the US Government through the Agency for International Development (AID) and were matched by the Mexican Government. (An additional \$150,000 were obtained from AID in 1994).

In its initial stage the Foundation received valuable support from the National Academy of Sciences to organize its activities and to set up adequate links with the United States Government agencies.

Since then, several programs have been carried out to promote cooperation in science and technology between both countries: Binational Research Projects, Summer Fellowships, Visiting Senior Scientists and Graduate Fellowships. Since October 1996,

the Foundation has been exploring new forms of operation, focusing on specific issues financed by sponsoring entities:

- Water in Health and the Environment at the Border, with EPA financing;
- Activities with the Hewlett Foundation to support the training of specialists in Science and Technology Policy;
- Workshops on Advanced Research Techniques, also supported by the Hewlett Foundation;
- Exchanges between universities of the United States and Mexico to promote linkages with small and medium size industries, undertaken with financing from SEP;

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Mr. George Brown, ranking democratic member of the US House of Representatives in the Science, Technology and Space Committee, was a key figure in the establishment of the Foundation and has been a leading promoter of improved science and technology collaboration between the two countries.

On the Mexican side, Mr. Carlos Bazdresch, General Director of the National Council for Science and Technology (CONACYT) and member of the Board of Governors, has played a key role in the re-orientation and development of the Foundation.

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PRESIDENT'S MESSAGE

United States-Mexico-Foundation for Science
President's Report
Washington, D.C. 1 May 1997

The Foundation has defined its profile as an organization that catalyzes joint scientific research and academic mobility, but which also sets new directions. It is in a unique position to bring together minds and resources on issues of common interest to both countries.

In 1997, the Foundation exchange programs grew both in scope and breadth. We kept promoting summer visits to the US for young researchers and short visits to Mexican institutions of eminent professors. In addition, Ph.D. students have benefited from having access to large facilities in the US, such as Fermilab, for their experimental work. In addition, there are several Mexican professionals working on Masters Programs in Science Policy at several U.S. universities. We have administrated the grants from the Hewlett Foundation and the Ministry of Education to accomplish the goals set by the Foundation's Board.

Sustainability issues are an important subject of attention for the Foundation as it is in a privileged position to bring together scientific, technological and social researchers to focus on complex problems such as water, the environment and health. It is perhaps

no exaggeration to say that at present, no single academic department or research center in either country has the ability to gather solid, multidisciplinary groups and plant the seeds for fertile research in these topics.

A second area of attention is related to the articulation of science and industry. Again, in this field, the Foundation is in a privileged position to stimulate this relationship. This is natural, since in the Board of Governors academics as well as representatives of the industrial world participate. The rapid social changes we are experiencing call for a more entrepreneurial atmosphere within academic communities to make them more responsive to market demands and, alternately, modern industry needs to acquire new knowledge to promote innovation. There is much to be learned in Mexico from the US experience concerning scientific and technological national strategies.

Representative George Brown's support has been extremely helpful in defining the role of the Foundation as a priority organization in the bilateral agenda. Here, we wish to acknowledge his interest and hard work and thank him for his valuable support.

Mauricio Fortes Besprosvani
President of the Board of Governors

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THE BOARD OF GOVERNORS

The Board of Governors is the main body in charge of the governance of the Foundation. It has 14 members, seven from Mexico and the other seven from the United States. On each side, three members are from academia, two from the business sector, and two from related government bodies and institutions.

The Governors represent diverse organizations, but act in their personal capacities. The U.S. members represent: the U.S. House of Representatives Committee on Science, Space, and Technology; the Smithsonian Institution; the National Academies of Sciences and Engineering, the National Institute of Medicine; and the business sector. On the Mexican side, the members represent: the National Council for Science and Technology (CONACYT), the President's Science Advisory Council, the Mexican Academy of Sciences (Academia Mexicana de Ciencias), the National Academy of Medicine (Academia Nacional de Medicina), the National Academy of Engineering (Academia Nacional de Ingenieria), and the business sector.

The U.S. members of the Board of Governors are:

Dr. Craig Black: Vice Chair of the Executive Committee

Director, Museum of Natural History of Los Angeles (Retired). Dr. Black received a PhD in Biology from Harvard University.

He was President of the Society of Vertebrate Paleontology and of the Paleontological Society. He was director of the Natural History Foundation, the

Carnegie Museum of Natural History, the Museum of Texas Tech University and professor of Biology at the University of Kansas. He received honors as Simpson Fellow from Amherst College to enter Johns Hopkins Medical School, Kellogg Fellow from Amherst College, National Institutes of Health Predoctoral Fellowship. He was a member of the board of the National Science Foundation and of Enterprise for the Americas.

Dr. Ernest Eliel: Member of the Executive Committee

Professor of Chemistry, Emeritus. University of North Carolina. Dr. Eliel is a Graduate of the University of Havana and received his Ph. D. from the University of Illinois. He was professor of Chemistry and Head of the Chemistry Department at the University of Notre Dame prior to coming to North Carolina. He has been President of the American Chemical Society (ACS) and Chair of the Council of Scientific Society Presidents. He is a member of the National Academy of Sciences, USA, a corresponding member of the Mexican Academy of Sciences, a fellow of the American Academy of Arts and Sciences and of the American Association for the Advancement of Science. He holds honorary degrees from Duke University, the University of Notre Dame and Babes-Bolyai University (Cluj, Romania). He has been recognized by the George C. Pimentel Award in Chemical Education and the Priestley Medal of the ACS and by the NAS award for Chemistry in Service to Society. His name appeared in the 75th anniversary issue of Chemical and Engineering News as one of the 75 most distinguished contributors to the Chemical Enterprise. He is a former president of the Governing Board of the US Mexico Foundation for Science. He holds honorary degrees from Duke University, the University of Notre Dame and Babes-Bolyai University (Cluj, Romania). He has been recognized by the George C. Pimentel Award in Chemical Education and the Priestley Medal of the ACS and by the NAS award for Chemistry in Service to Society. His name appeared in the 75th anniversary issue of Chemical and Engineering News as one of the 75 most distinguished contributors to the Chemical Enterprise. He is a former president of the Governing Board of the US Mexico Foundation for Science.

Dr. S. Allen Heininger

Corporate Vice President of Resource Planning (Retired). Monsanto Company. He received a B.A. from Oberlin College and M.S. and D.Sc. in Chemistry from Carnegie Mellon University. He joined the Monsanto Company in 1952, and rose over a 38 year career to become Corporate Vice President for Resource Planning and a member of the Executive Management Committee and Executive Committees, prior to retirement in 1990. He was then elected President of the American Chemical Society in 1991 and served on the ACS Board of Directors from 1991- 1993. In addition, he served as President of the Industrial Research Institute in 1988 and a member of the IRI Board from 1983-1989. He is a Fellow of the American Association for the Advancement of Science, and a member of Sigma Xi, the New York Academy of Science, and Chairman of the Emeriti Committee of the IRI.

Dr. Susan C.M. Scrimshaw

Dean, School of Public Health. The University of Illinois at Chicago. She received a Ph.D. in Anthropology from Columbia University. She has been President of the National Society for Medical Anthropology and serves on many boards, including the international Health Board of the Institute of Medicine, the Population Committee of

the National Academy of Sciences and others. In 1985, she received the Margaret Mead Award from the Society of Applied Anthropology and the American Anthropological Association. She has been elected a Member of the Institute of Medicine, Fellow of the American Association for the Advancement of Science, the American Anthropological Association, and the Society for Applied Anthropology. She has received special recognition and distinguished service awards from the Epilepsy Foundation of America and the local chapter of the American Association of University Women.

Dr. Beryl Simpson

Department of Botany, Herbarium. University of Texas. She is a botanist and evolutionary biologist. She received her A.B. in biology from Radcliffe College and her M.A. and Ph.D. Degrees from Harvard University. She served as Curator at the Smithsonian's Museum of Natural History from 1971 to 1978. She left the Smithsonian to take her current position as Professor of Botany at the University of Texas in 1978. Since 1994, she has held the C. L. Lundell Chair in Systematic Botany. She is a member of Phi Beta Kappa, Sigma Xi, and she has been elected a fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences. She has served as President of the Society for the Study of Evolution, the Botanical Society of America, and, most recently, the American Society of Plant Taxonomists. In addition, she was President of the Third International Congress of Systematic and Evolutionary Biology and the Chairman of the U.S. National Committee to the International Union of Biological Sciences. She currently serves on the editorial boards of *Evolutionary Ecology* and *Darwiniana*. She is also a member of the Smithsonian Council.

Dr. Mario Molina

Institute Professor. Massachusetts Institute of Technology. Dr. Molina has been involved in developing our scientific understanding of the chemistry of the stratospheric ozone layer and its susceptibility to human-made perturbations. He holds a postgraduate degree from the University of Freiburg, West Germany, and a Ph.D. in Physical Chemistry from the University of California, Berkeley. He came to MIT in 1989 with a joint appointment in the Department of Earth, Atmospheric and Planetary Sciences and the Department of Chemistry and was named MIT Institute Professor in 1997. Prior to joining MIT, he held teaching and research positions at the Universidad Nacional Autónoma de México; the University of California, Irvine and the Jet Propulsion Laboratory at the California Institute of Technology. He was elected to the National Academy of Sciences in 1993 and the Institute of Medicine in 1996. Currently, he serves on the President's Committee of Advisors in Science and Technology, the Secretary of Energy Advisory Board, and as Chair of the Advisory Board of the United Nations Environment Programme Regional Office for North America. He also serves on the National Research Council Board on Environmental Studies and Toxicology, and on the boards of the US-Mexico Foundation for Science and other non-profit environmental organizations. He has received several awards for his scientific work, including the 1995 Nobel Prize in Chemistry, which he shared with Professors F.S. Rowland and P. Crutzen for their work in atmospheric chemistry.

The Honorable Jaime Oaxaca

Vice Chairman, Coronado Communications Corporation. He was a senate confirmed Presidential Appointee by President Reagan - (first and second terms), and reconfirmed for President Bush's term to be a member of the General Advisory Committee on Arms Control and Disarmament (GAC). He was also nominated by the president and confirmed by the senate for a six year term on the National Science Board. The GAC term was from 1982 to 1992. He received a BSEE, Engineering. He is Sloan Executive Fellow from Stanford University, Graduate School of Business. He has thirty nine years experience in the fields of engineering, engineering management, and program management; director of International and Domestic Marketing and Long Range Planning and received the "Jaime Oaxaca" award for excellence in engineering and dedication to the community, as well as the Outstanding Engineer Merit Award by the Institute for the Advancement of Engineering. He was selected by the National Science Foundation to review Science and Technology: A Five year Outlook, a report from the National Academy of Sciences, and was nominated for the Engineer of the Year Award by the National Academy of Sciences.

The Mexican members of the Board of Governors are:

Dr. Mauricio Fortes Besprosvani: President of the Board of Governors.

Physics Institute Professor. Universidad Nacional Autónoma de México, Coordinator of International Affairs of the Mexican Academy of Sciences, and President of the United States-Mexico Foundation for Science.

He received his Ph. D. In Nuclear Physics from the State University of New York at Stony Brook and worked at the Niels Bohr Institutet, Denmark. He has been General Coordinator of Graduate Studies of the National Autonomous University of Mexico, President of the Mexican Academy of Sciences, Member of the Directive Council of the National System of Researchers, Advisor to the General Secretary of the National Autonomous University of Mexico. He is member of the American Physical Society and the New York Academy of Sciences, among others. He has many scientific and educational publications.

Lic. Carlos Bazdresch Parada

General Director. National Council for Science and Technology (CONACYT). He is a Ph. D. candidate for a degree in Economics at Harvard University. He is author of a number of articles and reviews on the economic history of Mexico. He was Deputy Director of Economic and Social Programming for the Mexican Ministry of the Presidency; General Manager for Programming and Project Evaluation at Nacional Financiera; Deputy Director for Economic and Banking Research at the Bank of Mexico; Advisor to the Under Secretary of Finance and Public Credit and Advisor to the Director General of the Bank of Mexico; Executive President of the Center for Research and Advanced Education in Economics; and, since 1985, Editor of *El Trimestre Economico*.

Dr. Pablo Rudomín Zevnovaty

General Coordinator of the Science Advisory Council of the Presidency of the Republic. He received his Ph. D. degree in Physiology from the Center of Advanced Research and Studies of the Politechnical National Institute. He is member of the

National System of Researchers in Biological, Medical and Chemical Science. He is a member of the Advisory Council of Science of the Presidency of the Republic and of the Advisory Council of the National Council for Science and Technology. He has been President of the Mexican Academy of Science. He received the "Prince of Asturias" award from Spain, the Alfonso Caso Award from the Mexican Academy of Science, the National Award for Science from the Mexican Government among others.

Dr. Ismael Herrera Revilla

Director of the Institute on Informatics, Applied Mathematics and Systems (IIMAS), UNAM. He holds a Ph. D. in Applied Mathematics, Brown University, 1962. He received the Award of the Mexican Academy of Sciences, the BANAMEX Award on Science and Technology, the National Award on Scientific Research, and the "Luis Elizondo" Award.

Among other distinctions he has been Director of the Institute of Geophysics; President of the Mexican Academy of Sciences; Member of the Board of Directors and of the Advisory Council for Research of the Mexican Petroleum Institute; Organizer, Founder and First Technical Director of the National Council for Science and Technology (CONACYT); President of the American Academy of Mechanics, Region III; President of the Mexican Geophysical Union; Member of the Board of Directors of the National Institute of Astronomy, Optics and Electronics; President of the Latinamerican Association for Ground Water Studies; Member of the Scientific Advisory Council to the President of Mexico; President of the National Academy of Engineering; Emeritus Professor of the National University of Mexico; Chair of Excellence of the National Council for Science and Technology (Highest Level); Emeritus Professor of the National System of Scientific Researchers.

American Academy of Mechanics, Region III; President of the Mexican Geophysical Union; Member of the Board of Directors of the National Institute of Astronomy, Optics and Electronics; President of the Latinamerican Association for Ground Water Studies; Member of the Scientific Advisory Council to the President of Mexico; President of the National Academy of Engineering; Emeritus Professor of the National University of Mexico; Chair of Excellence of the National Council for Science and Technology (Highest Level); Emeritus Professor of the National System of Scientific Researchers.

He has published 163 Original Research Papers, 1500 citations to research papers, 14 books and 158 citations to books.

Dr. Adolfo Martínez Palomo

General Director. Center for Research and Advanced Studies (CINVESTAV). He is Doctor in Science from the Universidad Nacional Autónoma de México. He has been Titular Professor and Chief of the Experimental Pathology Department of the CINVESTAV. Among other awards, he is a member of El Colegio Nacional, the National System of Researchers and the Board of Governors of the National Autonomous University of México. He has published 130 scientific articles, 36 Chapters in books, 21 essays, etc.

Ing. Benito Bucay F.: Treasurer and Member of the Executive Committee

Director, Xabre, S.A. de C.V. B.S. Chemical Engineering – National University of Mexico, Graduate studies in operations research and computer science at the National University of Mexico and University of Oklahoma; business and project

management, U. Of Chicago and UCLA. He has been director of the Chemical Division and senior V.P., Grupo DESC; managing director, Industrias Resistol and Xabre; Director of finance and planning, Monsanto Mexicana. He received the Ernesto Ríos award from the Collegium of Chemists and Chemical Engineers; distinguished Alumnus award from the Dept of Chemistry; National University of Mexico; he is a Fellow of the Mexican Academy of Engineering. Board member of Eureka (chairman), Mexican Petroleum Institute; Chairman of the Board of Trustees, National University of Mexico; member of the Board of Trustees, American British Cowdray Hospital in Mexico; member of the International Advisory Board of Westcoast Energy International, Inc. (Canada).

Dr. Raúl Gerardo Quintero Flores

Director of the Technology Division. Hojalata y Lámina, S.A. (HYLSA). He received Masters Degrees in Science in Electrical Engineering and in Mechanical Engineering at MIT. He was awarded the Doctor in Engineering Degree, Honoris Causa by the Universidad Autónoma de Nuevo León for his contribution to Technology and Education. He started the School of Graduates of the School of Mechanical and Electrical Engineering and was its Dean for ten years. He is National President of the Mexican Association of Executives of Applied Research and Technological Development. The Indonesian Government appointed him as Honorary Consul of that country in the North of Mexico.

Current Executive Director of the U.S. Mexico Foundation for Science, appointed by the Board of Governors.

Ing. Guillermo Fernández de la Garza (Executive Director)

He obtained an Electrical, Mechanical Engineer Bachelor degree, and a Physics degree from the National University of Mexico (UNAM); he also studied in the Nuclear Engineering Masters Degree program at the National Polytechnic Institute (IPN). He obtained an M.Sc. in Engineering Economics Systems at Stanford University. He collaborated with the Federal Electricity Commission of México. He became adjunct Director of the National Council for Science and Technology (CONACYT). He acted as Executive Director of the Electrical Research Institute (IIE) and later was Technical Secretary to the Mexican National Commission of Energy Efficiency (CONAE). He has been active in several Mexican and International professional organizations like the IEEE and in advisory councils of UNESCO, UNIDO and the IAEA.

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BINATIONAL RESEARCH PROJECTS

In 1993, the United States-Mexico Foundation for Science had as its first activity a financing program for research projects, giving priority to the following areas: environmental, public health and socioeconomic problems derived from the integration of both societies. Also, projects of exceptional merit in Biology,

Engineering, Mathematics and Physics were supported according to the availability of funds. There are serious problems in public health, environmental and socioeconomic areas that both countries have in common and for which binational joint research could find feasible solutions.

The first call for pre-proposals brought forth 440 initiatives. All pre-proposals were sent for a rigorous review to peer researchers in the scientific communities of the two countries. In May 1993, the Board of Governors convened and decided to invite the authors of the 60 most meritorious pre-proposals to submit a full proposal to the consideration of the Foundation and compete for financial support. From the 60 invited, only 53 were received and evaluated by an even more rigorous peer review system. Each proposal was sent to the two members of the Scientific and Technical Committee in that field of knowledge, asking them to have it reviewed by at least four more referees, experts in the field. During the meeting of the Board of Governors in September 1993, the decision was made to grant financial support to the 12 most meritorious projects.

The agreements were signed on December 1993 and January 1994, for two years, with a total contribution of US\$949,215.

A second call for pre-proposals was published by the Foundation in October 1993. The deadline for submission of pre-proposals was January 15, 1994. By then, 221 pre proposals were received and the same process of peer reviewing was started over again. The Executive Committee of the Board of Governors met in Washington DC, on April 13, 1994, and resolved to invite the authors of the 66 more worthy pre-proposals to present a full and formal proposal to the Foundation by July 15, 1994. Finally, the Board of Governors decided to support 12 projects. Most of them will be finished in 1998. The contribution budgeted for this second round of projects is of US\$839,967.

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