Perspectives on Science and Our Expectations

Next week, as we are all aware, we begin celebrating the 200th anniversary of the American Revolution. Two hundred years before that, in 1576, Galileo was a boy of 12; Copernicus had been dead for 33 years; and Newton's birth was 66 years away. Science, as a way of knowing, has been with us for only a few yesterdays and "us" is a very small part of mankind. Perhaps we should consider it in some perspective: How did science develop? What is the view from other cultures? What are its implications for human values? For human understanding? For those who seek opportunities within it?

The forthcoming AAAS Annual Meeting has some 50 symposia on "Perspectives on Science," the third of the three main categories of the Meeting. (The first, "Frontiers of Science," was described in the 12 December issue of *Science*, pages 1079–1081; the second, "Uses of Science," in the 19 December issue of *Science*, pages 1190–1192.) These symposia are divided into six groups: general interest, ethical perspectives, cultural perspectives, historical perspectives, education, and opportunities. All of these, each in its own way, help us in gaining a very needed perspective toward science.

What follows is a direct list of all of the symposia in the several groups. Taken together with the almost 130 symposia described in the two preceding issues, I am sure that you will agree that we have a very special Meeting for our bicentennial year, one which you cannot afford to miss. So come join us and share your perspective with your many colleagues at this singular event in the history of AAAS.

—ARTHUR HERSCHMAN

Annual Meeting
Boston
18-24 February 1976

For further details see Preliminary Program in *Science*, 14 November 1975, pages 651–661. For information about tours and special events, see *Science*, 28 November 1975, pages 871–873.

A. General Interest

Planning for the Future: Limits and Prospects (18 Feb.): Experimenting society, public learning, prospects for mankind.
Edwin P. Hollander, Daniel Rich, Donald T. Campbell, Daniel Bell, Donald Schon, Herman Kahn.

Science and Art (19 Feb.): Contained in light, musical cosmology, movies and models.
Rolf M. Sinclair, Charles Ross, Benjamin Boretz, Charles Eames.

Scientific Communications and the Advancement of Science (19 Feb.): Improving communications, economic condition, communicating to the public, a plan of action.
Ruth M. Davis, Joel D. Goldhar, Alvin M. Weinberg, Fritz Machlup, J. Herbert Hollomon, Erwin D. Canham, Lewis M. Branscomb.

Great Women in Science (20 Feb.): Challenges in the aquatic world, lure of the stars, stumbling into science, Florence Sabin, Rachel Carson, Maria Mitchell, hope, high energy physics, the hurdles, congressman's view.
Ruth M. Davis, Dixy Lee Ray, Margaret Burbidge, Mildred S. Dresselhaus, Margaret Rossiter, Paul Brooks, Sally Gregory Kohlstedt, Derek John De Solla Price, Gail Hanson, Gerard Piel, George E. Brown, Jr.

Science as Drama (21 Feb.): Theme in film and television.
Judith Wechsler, Howard J. Lewis, Norman Metzger, Robert Wise, Gene Roddenberry, Carl E. Sagan, Hollis Alpert, Charles Eames, Philip Morrison.

Technology and Values (21 Feb.): Big technology, end-use efficiency, small technology, development process.
Harvey Brooks, Robert A. Charpie, Robert H. Socolow, Robert H. Williams, Franklin A. Long, Daniel Bell, Alex Inkeles, Amory B. Lovins.

Science and Anti-Science (22 Feb.): Varieties, new irrationalism, pop science, public perceptions.
L. Vaughn Blankenship, Ian Mitroff, Richard Mason, Paul Kurtz, George Basalla, Daniel Metlay, Todd la Porte.

The Scientists' Interface with the Press: Who Carries the Burdens? (23 Feb.): Ally to science, enemy to news, scientific news, headlines and bylines, T.V. image, who cares, misunderstanding, pre-conference news breaks.
Homer J. Hall, Albert F. Plant, David F. Salisbury, Walter L. Sullivan, W. Alec Jordan, Raymond P. Mariella, Audrey Likely, David P. Rall.

Science and Society in the 18th Century and in the Future (24 Feb.): Space and time, plant sciences, biological advances, responsible use, ethics, food.
Magnus Pyke, William D. McElroy, Sir Herman Bondi, J. Heslop-Harrison, W. F. Bodmer, Josef Kates.

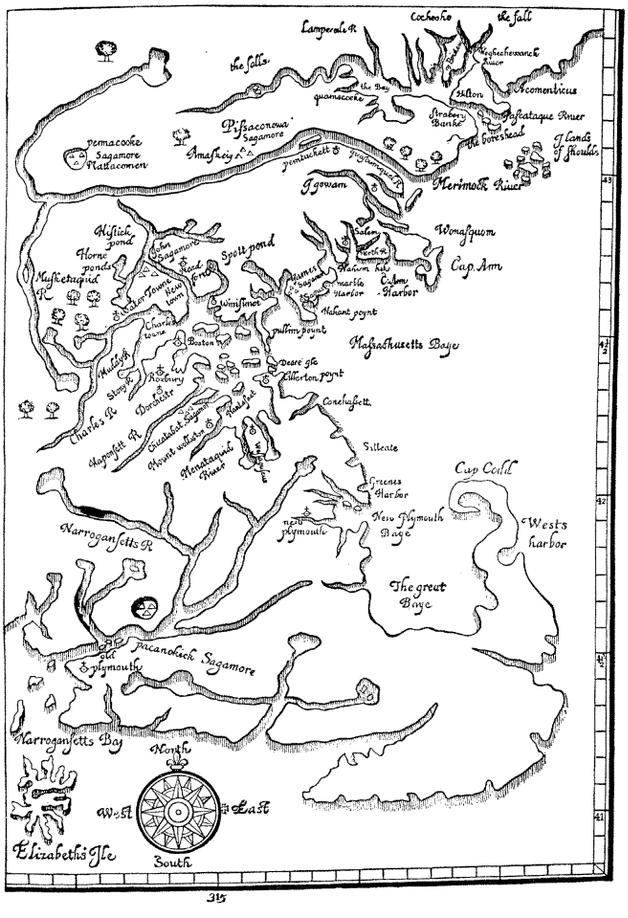
B. Ethical Perspectives

Human Values in Engineering (18 Feb.): Ethical problems, moral philosophy, professional societies, U.S. Congress, developing countries, industry.
T. Paul Torda, Robert F. Ladenson, Victor Paschkis, Barry Hyman, Jerome Steffens, Robert Seidel.

Ethics and the Corporate Scientist (19 Feb.): Management view, professional societies, professional ethics, science education, legal rights and responsibilities, individual integrity, whistleblowing, science and ethics, scientist as criminal.
Robert J. Baum, Arthur Bueche, Alan C. Nixon, Dorothy Zinberg, Peter Petkas, Carol Benson, Jack Cloherty, Louis V. McIntire, Douglas Bray, Donn B. Parker.

Roles for Scientific Societies with Regard to Issues of Scientific Freedom and Responsibility (20 Feb.): Major proposals, historical context, framework to follow-through.
William A. Blanpied, William D. McElroy, John T. Edsall, Don K. Price, Frank Von Hippel.

Literary Modes in the Practice of Science (20 Feb.): Concept of tragedy, how is science made?, Promethean technology, picaresque science, pejorism.
Joseph W. Meeker, Harry Boardman, Thomas R. Blackburn, Conrad Hyers, Garrett Hardin.



Wood's map of New England, 1634. [Boston 200]

Transdisciplinary Studies in Science and Values (21–22 Feb.): Two subcultures, natural law, Eastern and Western science, can values be measured?, progress in medicine, human behavior, freedom and coercion, alternate technologies, South Asia.

William A. Blanpied, Gerald Holton, Melvin Kranzberg, Harry Boardman, John M. Koller, Milton Rokeach, Kenneth F. Schaffner, Joseph W. Meeker, Peter Buck, Philip L. Bereano, Nicholas Wade, Robert S. Anderson.

C. Cultural Perspectives

Science and Technology: Our Afro-American Prospective (18 Feb.): Mental health needs, myths, realities, welfare of children, health services, housing.

Kathleen J. Prestwidge, June J. Christmas, Patricia G. Morisey, Gertrude T. Hunter, Gloria Toote.

Science and Technology in Brazil: Past, Present, and Future (19 Feb.): Discovery and use, evolution, technology, sciences of man, experimental science, scientific training, support of science, economical development, earth sciences.

Oscar Sala, Leonard M. Rieser, Paulo Emilio Vanzolini, Antonio Candido de Mello e Souza, Julio R. Katinsky, Ulpiano Bezerra de Menezes, Mauricio Rocha e Silva, José Reis, Gerhard Jacob, Isaac Kerstenetzky, Aziz Ab'Saber, J. J. Bigarella.

Intercultural Relations Between Mexico and the United States (20 Feb.): Prehistory, archaeology, ethnohistory, linguistics, ethnology, social anthropology, applied anthropology.

Fernando Cámara, Jose Luis Lorenzo, Wigberto Jimenez-Moreno, Yolando Lastra, Angel Palerm, Alfonso Villa-Rojas.

Public Conception of Science and Perspectives on Current Crucial Problems in Japan (22 Feb.): Intellectual background, antitechnocracy, science and the public, life sciences, resources recycling, rice eating, urbanization, language sciences.

Keiko Nakamura, Harrison Brown, Yoichiro Murakami, Nobushige Sawada, Gotaro Tomonaga, Martha Ventilla, Fred C. C. Peng, Hiroshi Hori, Yoichi Fukushima.

Unfinished Business: 200 Years of Native American Indian Affairs (22 Feb.): Federal recognition, trusteeship, demythologizing, stereotypes.

Philleo Nash, Andrew X. Akins, Ada Deer, Michael Dorris, Alfonso Ortiz.

Health Science Education as Applied to National Needs (23 Feb.): Community health, National Health Service, South Korea, Indonesia, Bangladesh, urban community, USSR, role allocation, rural health, Iran.

Mehdi Tavassoli, Arthur H. Livermore, John H. Bryant, Francis P. Chinard, Zenonas Danilevicius, Majid Rahnama, Carl E. Taylor, Moslem Bahadori.

D. Historical Perspectives

American Mathematics: Retrospect and Prospect (18 Feb.): Mathematical heritage, mathematical education.

Arnold Wendt, F. Joachim Weyl, Garrett Birkhoff, Edwin E. Moise.

Social History and Archaeology of the 17th and 18th Centuries in the United States (19 Feb.): Material culture, vernacular studies, ceramics, early black settlement, written record, settlement, colonial cemeteries, faunal studies, foodways, contact period.

James Deetz, Henry Glassie, Abbott L. Cummings, Geoffrey Moran, Marley Brown III, John Demos, Albert Bartovics, Stephen Horvath, Joanne Bowen, Jeffrey Brain.

Science and Revolution (20 Feb.): English, French, American, Mexican, Russian, Chinese, and Cuban revolutions; independence in Latin America.

Thomas F. Glick, Everett Mendelsohn, Theodore M. Brown, Dora B. Weiner, Brooke Hindle, Roberto Moreno, Loren R. Graham, Peter Buck, Garland E. Allen.

The Sciences in America: A Bicentennial Retrospective (21–23 Feb.): Paradigm lost, view from abroad, public policy, popular attitudes, antebellum America, 19th century inventor, natural history research, higher education, earth sciences after Darwin, rationality and reform, classical genetics, pure and applied science, industrial research, scientific mobilization, foundations, mathematical frontier, between the two World Wars, biochemistry, World War II, science and the military, big science.

Nathan Reingold, Donald Fleming, William H. Goetzmann, Bruce Sinclair, Robert Post, Deborah J. Warner, Robert Bruce, Monte A. Calvert, Michele L. Aldrich, Stanley Guralnick, Steve Pyne, Sally Kohlstedt, Michael M. Sokal, Garland E. Allen, Charles Rosenberg, Kendall Birr, Alice Quinlan, Stanley Coben, Albert C. Lewis, Spencer Weart, Everett Mendelsohn, Robert Kohler, Carroll Pursell, Harvey Sapolsky, Charles Weiner.

Climate in the United States Since 1776 (23 Feb.): Meteorology in 1776, the Forty-Niners, drought and tree rings, pacific coastal climate.

J. Murray Mitchell, Jr., David M. Ludlum, Merlin P. Lawson, Charles W. Stockton, Gunnar I. Roden, Raymond S. Bradley.

History of the Association of Academies of Science and of Some Individual Academies of Science (24 Feb.): Promotion of human welfare, Maryland, Iowa, Pennsylvania, and Ohio academies.

John H. Melvin, Franz H. Rathmann, Lora Mangum Shields, Scott Nearing, Robert E. Murphy, Robert W. Hanson, George C. Shoffstall, Jr., Charles M. Vaughn, Arthur H. Livermore, Richard J. Raridon.

Biology and the American Public, Then and Now (24 Feb.): Zoology, Indian medicine, development of taxonomy, theory of evolution, support of endocrinology, biochemical pharmacology, oceanography, history and biology.

Charlotte M. Porter, Keir B. Sterling, Virgil H. J. Vogel, Henry D. Shapiro, Stephen J. Gould, Diana L. Hall, John Parascandola, Harold L. Burstyn, Jane M. Oppenheimer.

E. Education

Women and Mathematics (18 Feb.): Sex differences, mathematics achievement, mathematics filter, women's participation, creative men and women.

Lynn H. Fox, John Ernest, Elizabeth Fennema, Lucy Sells, Carolyn MacDonald, Edith H. Luchins, Ravenna Helson.

Environmental Education's New Audience and New Communication (18 Feb.): Electronic media, power of the pen, sensitivity, inner-city, pictures.

Richard L. James, Kate S. Taylor, Charles Roth, Edwina Czajkowski, James H. Zion, John Green, Jr.

Energy and Environmental Education (19 Feb.): Social studies, future directions.

John M. Fowler, Robert L. Silber, John Jones, Brian J. Larkin, Walter Bogan.

Current Practices in Environmental Education (19 Feb.): Training methods, community personnel, land disposal of waste, policy formation studies, teacher involvement.

Ronald J. Raven, John Montean, Emery Letham, Christopher White, Donald Rhine, Joseph Novak, George Garrigan, William Ritz, Norman Childers.

Science Education Amidst Educational Policies (20 Feb.): What goes?, NSF, curriculum development, needs and directions.

Arthur H. Livermore, Joseph M. Dasbach, Don I. Phillips, John I. Goodlad, Lowell J. Paige, Patsy T. Mink, Deborah P. Wolfe, Fletcher G. Watson, Robert G. Heyer, F. James Rutherford, Jean D. Grambs, Eleanor Rosenblum.

Can We Develop a Reliable Applied Science of Education? (21 Feb.): Key questions and directions, British open university, educational research, educational technology, hidden variables, science of instruction, institutional problems.

Joseph I. Lipson, Frederick Reif, Robert B. Davis, Brian N. Lewis, Seymour Papert, Ernst Z. Rothkopf, Arthur Luehrmann, James D. Koerner, Mary Budd Rowe, C. Victor Bunderson, Jessie C. Hartline, Roger Levien.

Museums and Science Education (22 Feb.): Perception, curriculum development, precollege science education, general public, orientation programs.

William A. Blanpied, Lee Kimche, Frank Oppenheimer, Watson M. Laetsch, Joel N. Bloom, Robert E. Murphy, Victor J. Danilov.

College Anyone, College Everyone, or College at All in Century III? (22 Feb.): Prerequisites, open-door university, what makes a scientist?

Robert B. Collagan, Fletcher Watson, Paul Brandwein, Herman Branson.

Research Techniques and Reports by High School Science Students (22 Feb.):

Frank W. Starr and selected students from Colorado, Iowa, New Mexico, Oklahoma, Pennsylvania, and Virginia high schools.

Symbolic Mathematical Computation: Its Potential for Science and Education (22 Feb.): Survey, implications, applications.

James H. Griesmer, Paul S. Wang, L. Wayne Fullerton.

Teaching of Science-Related Social Issues (23 Feb.): Educational research, dissemination of information, teacher preparation, education for survival.

Laura C. Trout, Fletcher G. Watson, Irving Morrissett, F. James Rutherford, James T. Robinson, Peter B. Dow.

New Frontiers in Mathematics Education (23 Feb.): Development of children, problem solving, mathematics resource.

William M. Fitzgerald, Eugene Nichols, George Springer, Uri Haber-Schaim, Alan Hoffer.

Birth of New Ways to Raise a Scientifically Literate Society: Research That May Help (24 Feb.): Personality variables, Piaget's theory, learning to learn, college science teacher, the lecture.

Mary Budd Rowe, Mary H. McCaulley, Anton E. Lawson, John J. Koran, Jr., J. Dudley Herron.

Innovative Approaches Currently in Use in Undergraduate Science Education (24 Feb.): Interdisciplinary science, individualization, self-paced education, audio-tutorial instruction, computer-managed instruction.

Robert A. Bernoff, Byron L. Youtz, Edwin P. Kurtz, Samuel N. Postlethwait, Robert Hurst, Michael Szabo.

International Communications: The Foreign Language Requirements for the Doctor of Philosophy Degree in the Sciences (24 Feb.): Astronomy-astrophysics, biology, chemistry, economics, philosophy.

Franz H. Rathmann, Owen J. Gingerich, Bentley Glass, Paul E. Fanta, Fritz Machlup, Willard Van Orman Quine, Richard Raridon.

F. Opportunities

Minorities in Science (19 Feb.): Medical college admissions test, graduate record examination, minority applicant pool, black institutions, black Americans, native Americans, Spanish-surname Americans.

Percy J. Russell, James L. Angel, Robert Altman, Ralph Cuzart, Frederick Humphries, James M. Jay, Don Jennings, J. V. Martinez.

Problems of Minorities at Majority Institutions (19 Feb.): Political environment, sociocultural factors, medical schools, students' perspective.

Francine B. Essien, Theodore Brown, Sigfredo Maestas, George I. Lythcott, Woodrow Myers, Janet S. Blackwell, Carl Spight.

Public Policy and Biomedical and Behavioral Training: Effective Development of Existing Potential (19 Feb.): Science policy, minority participation, mental health, health sciences, industrial sector.

Vijaya L. Melnick, Cora B. Marrett, Joseph W. Watson, William Denham, Robert Schlegel, Herman Smith, Ruth Kirschstein, Geraldine Woods.

Financial Support for Minority Scientific Activity in Education and Research (20 Feb.): Impact of funding, NIH, individual studies, NIMH, private sector, NSF.

Charles M. Goolsby, Miles M. Fisher IV, Zora J. Griffo, Samuel M. Nabrit, Mary S. Harper, Paul Wohlford, Maxine Bleich, James W. Mayo.

Affirmative Action: Myth or Reality? (20 Feb.): Academic community, rules of the game, national policy, private sector, congressional perspective.

Francine B. Essien, Franklin D. Hamilton, Vijaya L. Melnick, Ermon Hogan-Kamara, Patricia Garrison, James Goodwin, Margaret Gordon, Brock Heylin, Edward Roybal.

Special Training Programs for Minority Students in Science—College Level (21 Feb.): Science enrichment, medical students, premedical, medical training, health careers, summer programs, research training, industrial research, college curriculum.

Franklin D. Hamilton, Edgar Smith, Alonzo Atencio, Jewel Cobb, Stanford Roman, William Wallace, Richard McGinnis, Kenneth McLin, Dan Obasun, Bernis Barnes.

Special Training Programs for Minority Students in Science—Precollege Level (21 Feb.): Innovative methods, collegiate interface, television as a teaching tool, inner-city minority youth, Mexican-American students, ethnoscience.

Cyrus J. Lawyer, Shirley M. Malcom, Sidney A. McNairy, Jr., Joseph Gayles, Lee Colquitt, James Rutherford, Robert A. Warren, Carl Hime.

Are Scientists Different? The Job Crisis in Perspective (21 Feb.): Economic roots, unemployment, misemployment, changing conditions, alternative careers, trade union organizing.

Joseph Schwartz, Richard Rosen, Joseph Shapiro, Paul Raskin, David Kotelchuk.

Bicentennial Retrospectives and Prospectives: Science Education for Women (23 Feb.): Higher education, Cinderella and science, undergraduate education, admission and attrition of women, future for women.

Miriam Schweber, Mary Bunting, Patricia Graham, Mary Verheyden-Hilliard, Mildred Dresselhaus, Elizabeth Baranger, Virginia Trotter.

Bicentennial Retrospectives and Prospectives: Opportunities for Women in Science and Engineering (23 Feb.): Two hundred years, women in industry, recent changes, employment opportunities.

Miriam Schweber, Vera Kistiakowsky, Joan B. Berkowitz, Betty Vetter, Phyllis Wallace.