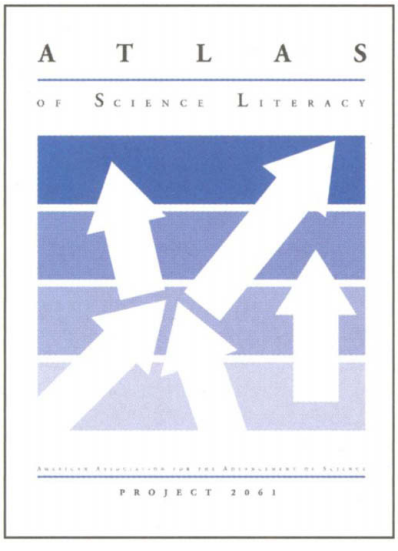
edited by Coimbra Sirica

SCIENCE EDUCATION

AAAS Chosen to Lead Effort to Improve Science Education

In 1989, when AAAS's Project 2061 published its first book, *Science for All Americans*, the authors described the nation's science and mathematics textbooks in terms that have since become familiar to policymakers and educators nationwide.

"The present science textbooks and methods of instruction, far from helping, often actually impede progress toward science literacy," the book said. "They emphasize the learning of answers more than the exploration of questions, memory at the expense of critical thought, bits and pieces of information instead of understandings in context, recitation over argument, reading in lieu of doing."



AAAS's *Atlas of Science Literacy* is among the tools playing a role in the new Center for Curriculum Materials in Science.

Now, thanks to a 5-year, $9.9-million grant from the National Science Foundation (NSF), Project 2061 has an opportunity to take its work to a new level, with a program that will allow it to have a long-term impact on curriculum research and development, on the graduate schools that prepare the professionals who educate teachers, and on the methods and materials used to teach science and mathematics to American schoolchildren. With three midwestern universities as partners—Michigan State University, the University of Michigan, and Northwestern University—AAAS will create a "Center for Learning and Teaching," one of three funded this year by NSF to expand the nation's "intellectual infrastructure" for teaching science, mathematics, engineering and technology.

"What is exciting to me is how much of our work is coming together in this center," said Jo Ellen Roseman, acting director of Project 2061, which was begun in 1985 to transform the way science and mathematics are taught in the United States. "We've developed guidelines for how materials should be designed, and for judging what constitutes good teaching, and now we have the opportunity to put all that expertise to work."

As one of the NSF's five Centers for Learning and Teaching (CLT), the new Center for Curriculum Materials in Science is being asked to respond to the challenges cited by NSF in a 3 May document requesting proposals for its CLT grant program.

"The need to replace a large number of educators who are expected to retire over the next decade is widely understood, and recent studies have indicated that many inadequately prepared educators enter the profession each year," according to NSF's "program solicitation" for its Centers for Learning and Teaching grant program. "Replenishing and diversifying the instructional workforce, K–16, and conducting ongoing research related to learning and teaching across the spectrum of these activities are clear national needs."

These are also among the goals of the new AAAS center, Roseman said. The partners have agreed to build up the field of professionals with advanced degrees who will become the future designers of instructional materials; to train science teachers and other professionals; and to conduct research that will guide the development of instructional materials for science, "at the highest level."

"We are working with smart, committed people," Roseman said. "The center will bring together scientists, education researchers, teacher education faculty, and local schoolteachers from the Chicago Public Schools, the Detroit Public Schools, and the Lansing School District."

David Campbell, program director for the NSF's Division of Elementary, Secondary and Informal Education, noted that the AAAS proposal had "filled a niche in the area of the development of instructional materials."

Together, the 10 NSF centers will work, "to enrich and diversify the national infrastructure for standards-based science, technology, engineering, and mathematics education," Campbell said.

For more information on AAAS's contribution to this national effort, see www.aaas.org.

AAAS Members Elected as Fellows

In September the AAAS Council elected 291 members as Fellows of AAAS. These individuals will be recognized for their contributions to science at the Fellows Forum to be held on 15 February 2003 during the AAAS Annual Meeting in Denver. The new Fellows will receive a certificate and a blue and gold rosette pin as a symbol of their distinguished accomplishments. Presented by section affiliation, they are:

Agriculture, Food, and Renewable Resources

Gordon R. Conway, Rockefeller Foundation • Katrina Cornish, USDA-ARS Western Regional Research Ctr., Albany, CA • David Glenn Gilchrist, Univ. of California, Davis • Robert M. Goodman, Univ. of Wisconsin, Madison • Prem P. Jauhar, USDA-ARS Northern Crop Science Lab., Fargo, ND • David A. Knauft, Univ. of Georgia, Athens • Jan E. Leach, Kansas State Univ. • P. K. R. Nair, Univ. of Florida • William L. Ogren, Hilton Head, SC • Michael K. Rust, Univ. of California, Riverside • Edward John Sadler, USDA-ARS Coastal Plains Soil, Water, and Plant Research Ctr., Florence, SC • Barbara O. Schneeman, Univ. of California, Davis • Paul A. Seib, Kansas State Univ. • Steven A. Slack, Ohio State Univ., Wooster

Anthropology
James M. Adovasio, Mercyhurst College, Erie, PA • Eric Delson, American Museum of Natural History • Donald K. Grayson, Univ. of Washington • Nina Grace Jablonski, California Academy of Sciences, San Francisco • George R. Milner, Pennsylvania State Univ. • Christopher B. Ruff, Johns Hopkins Univ. • Eugenie C. Scott, National Ctr. for Science Education, Oakland, CA • Bonnie W. Styles, Illinois State Museum, Springfield • Milford H. Wolpoff, Univ. of Michigan, Ann Arbor

Astronomy
Richard Salisbury Ellis, California Institute of Technology • Richard Tresch Fienberg, Sky & Telescope, Cambridge, MA • Scott J. Kenyon, Smithsonian Astrophysical Observatory, Cambridge, MA • Jonathan I. Lunine, Univ. of Arizona • Carolyn S. Shoemaker, Lowell Observatory, Flagstaff, AZ • Jill Cornell Tarter, SETI Institute, Mountain View, CA

Atmospheric and Hydrospheric Sciences
Janet Arey, Univ. of California, Riverside • Hugh William Ducklow, College of William and Mary, Gloucester Point, VA • James Neville Galloway, Univ. of Virginia • Margaret S. Leinen, National Science Foundation • Robert L. Molinari, NOAA, Miami, FL • H. Göte Östlund, Univ. of Miami • Stephen E. Schwartz, Brookhaven National Lab. • Anne M. Thompson, NASA Goddard Space Flight Ctr., Greenbelt, MD

Biological Sciences
Michael E. Adams, Univ. of California, Riverside • J. David Allan, Univ. of Michigan, Ann Arbor • Marjorie A. Asmussen, Univ. of Georgia • Mary Ann Baker, Univ. of California, Riverside • Kathryn Barton, Carnegie Institute of Washington, Stanford, CA • Raymond T. Bauer, Univ. of Louisiana, Lafayette • James A. Birchler, Univ. of Missouri, Columbia • Wendy Jean Farmer Boss, North Carolina State Univ. • Michael D. Breed, Univ. of Colorado, Boulder • Stephen D. Cairns, National Museum of Natural History • Judy Callis, Univ. of California, Davis • Clinton Charles Spencer Chapple, Purdue Univ. • Nancy L. Craig, Johns Hopkins Univ. • Thomas W. Cronin, Univ. of Maryland, Baltimore • Margaret E. Daub, North Carolina State Univ. • Helen Jean Conrad Davies, Univ. of Pennsylvania • Paula T. DePriest, National Museum of Natural History • Richard A. Dixon, Samuel Roberts Noble Foundation, Ardmore, OK • Susan E. Fahrback, Univ. of Illinois, Urbana • Darryl L. Felder, Univ. of Louisiana, Lafayette • David William Gailbraith, Univ. of Arizona • Charles S. Gasser, Univ. of California, Davis • Carol A. Gross, Univ. of California, San Francisco • M. G. Harasewych, National Museum of Natural History • Christopher J. Humphries, Natural History Museum, London, England • Christon Hurst, U.S. Environmental Protection Agency, Cincinnati • Susan S. Kilham, Drexel Univ. • W. John Kress, National Museum of Natural History • Leonard Krishtalka, Univ. of Kansas • Philip Leder, Harvard Medical School, Boston • Rafael Lemaitre, National Museum of Natural History • Michael J. Lichten, National Cancer Institute • Chentao Lin, Univ. of California, Los Angeles • Jean Lodge, USDA Forest Service, Luquillo, PR • James Mallet, Univ. College London • Marc Mangel, Univ. of California, Santa Cruz • Michael A. Mares, Univ. of Oklahoma, Norman • Joachim Messing, Rutgers Univ. • Richard W. Michelmore, Univ. of California, Davis • Jon Laurence Norenburg, National Museum of Natural History • Frank V. Paladino, Indiana Univ.-Purdue Univ., Fort Wayne, IN • Margaret A. Palmer, Univ. of Maryland, College Park • Norman I. Platnick, American Museum of Natural History • Richard Scott Poethig, Univ. of Pennsylvania • Ralph S. Quatrano, Washington Univ. • Alexander S. Raikhel, Univ. of California, Riverside • Tom Ray, Univ. of Oklahoma, Norman • Jeffrey W. Roberts, Cornell Univ. • Derek A. Roff, Univ. of California, Riverside • John T. Rotenberry, Univ. of California, Riverside • Robert Schleif, Johns Hopkins Univ. • Frederick R. Schram, Univ. of Amsterdam • James N. Siedow, Duke Univ. • Brian Harvey Smith, Ohio State Univ., Columbus • Michael L. Smith, Conservation International, Washington, DC • Mark S. Springer, Univ. of California, Riverside • Catherine L. Squires, Tufts Univ. Medical School, Boston • David L. Strayer, Institute of Ecosystem Studies, Millbrook, NY • Prue Talbot, Univ. of California, Riverside • James D. Thomas, National Coral Reef Institute, Dania, FL • Stewart Nelson Thompson, Univ. of California, Riverside • Robert M. Timm, Univ. of Kansas, Lawrence • James W. Valentine, Univ. of California, Berkeley • Alexander J. Varshavsky, California Institute of Technology • Elizabeth Vierling, Univ. of Arizona • Richard D. Vierstra, Univ. of Wisconsin, Madison • Rytas Vilgalys, Duke Univ. • Kathleen C. Weathers, Institute of Ecosystem Studies, Millbrook, NY • Quentin D. Wheeler, National Science Foundation • Andrew Wright, Tufts Univ. Medical School, Boston • Keith Robert Yamamoto, Univ. of California, San Francisco • Gerben John Zylstra, Rutgers Univ.

Chemistry
Richard Neil Armstrong, Vanderbilt Univ. • Moungi G. Bawendi, Massachusetts Institute of Technology • David N. Beratan, Duke Univ. • David E. Bergbreiter, Texas A&M Univ., College Station • David C. Clary, Univ. College London • Luis Echegoyen, Clemson Univ. • Juli Feigon, Univ. of California, Los Angeles • Robert W. Field, Massachusetts Institute of Technology • Robin L. Garrell, Univ. of California, Los Angeles • Robert J. Gordon, Univ. of Illinois, Chicago • Samuel O. Grim, Univ. of Maryland, College Park • Angela M. Gronenborn, National Institute of Diabetes and Digestive and Kidney Diseases • John Charles Hemminger, Univ. of California, Irvine • Susan H. Hixson, National Science Foundation • Paul L. Houston, Cornell Univ. • Kim D. Janda, Scripps Research Institute, La Jolla, CA • Laura L. Kiessling, Univ. of Wisconsin, Madison • David S. Kliger, Univ. of California, Santa Cruz • Marie E. Krafft, Florida State Univ. • Dennis C. Liotta, Emory Univ. • Seth R. Marder, Univ. of Arizona • Dale L. Perry, Lawrence Berkeley National Lab. • George M. Rubottom, National Science Foundation • David H. Russell, Texas A&M Univ., College Station • Alfred P. Sattelberger, Los Alamos National Lab. • Henry F. Schaefer III, Univ. of Georgia • Giacinto Scoles, Princeton Univ. • G. Warren Smith II, Slippery Rock Univ. • Maria Tomasz, CUNY-Hunter College • Isiah M. Warner, Louisiana State Univ., Baton Rouge • Peter Wipf, Univ. of Pittsburgh

Dentistry and Oral Health Sciences
Lars Erik Hammarstrom, Karolinska Institute, Huddinge, Sweden

Education
Allan Collins, BBN Technologies, Cambridge, MA • Arthur Eisenkraft, Ossining, NY • Shirley Frye, Numerics, Inc., Cave Creek, AZ • Sue V. Rosser, Georgia Institute of Technology • Lee S. Shulman, Carnegie Foundation for the Advancement of Teaching, Menlo Park, CA • Juliana Texley, Anchor Bay School District, New Baltimore, MI

Engineering
Mikhail A. Anisimov, Univ. of Maryland, College Park • Taft H. Broome Jr., Howard Univ. • Mitra Dutta, Univ. of Illinois, Chicago • Thomas W. Eagar, Massachusetts Institute of Technology • John J. Gilman, Univ. of California, Los Angeles • Charles N. Haas, Drexel Univ. • Dennis W. Hess, Georgia Institute of Technology • Nick Holonyak Jr., Univ. of Illinois, Urbana • Asad M. Madni, BEI Technologies, Inc., Sylmar, CA • Arunava Majumdar, Univ. of California, Berkeley • Christine M. Mazier, Univ. of Minnesota, Minneapolis • Priscilla P. Nelson, National Science Foundation • Stuart O. Nelson, USDA Richard B. Russell Agricultural Research

Ctr., Athens, GA • Donald L. Nuss, Univ. of Maryland, College Park • Henry M. Paynter, Pittsford, VT • Lisa A. Pruitt, Univ. of California, Berkeley • Mary J. Sansalone, Cornell Univ. • Subhas K. Sikdar, U.S. Environmental Protection Agency, Cincinnati • Craig F. Smith, Lawrence Livermore National Lab. • Kim A. Stelson, Univ. of Minnesota, Minneapolis • Lung-Wen Tsai, Univ. of California, Riverside • Kambiz Vafai, Univ. of California, Riverside • Jeffrey Wadsworth, Lawrence Livermore National Lab. • Felix E. Zajac, V.A. Palo Alto Health Care System

General Interest in Science and Engineering
Steven T. Case, Univ. of Mississippi Medical Ctr., Jackson • Lynne Timpani Friedmann, Friedmann Communications, Solana Beach, CA • Elizabeth S. Ivey, Bloomfield, CT • Leon Jaroff, East Hampton, NY

Geology and Geography
Thomas John Baerwald, National Science Foundation • John C. Behrendt, Univ. of Colorado, Boulder • Enzo Boschi, Instituto Nazionale de Geofisica e Vulcanologia, Rome, Italy • Peter Dodson, Univ. of Pennsylvania • William L. Fisher, Univ. of Texas, Austin • Billy P. Glass, Univ. of Delaware • Eric C. Grimm, Illinois State Museum, Springfield • David P. Hill, U.S. Geological Survey, Menlo Park, CA • Philip A. Meyers, Univ. of Michigan, Ann Arbor • Richard J. O'Connell, Harvard Univ. • C. Wylie Poag, U.S. Geological Survey, Woods Hole, MA • Charles T. Prewitt, Carnegie Institution of Washington, Washington, DC • Lorin R. Stieff, Stieff Research & Development Co., Inc., Kensington, MD • Billie Lee Turner II, Clark Univ.

History and Philosophy of Science
Bruce V. Lewenstein, Cornell Univ. • John William Servos, Amherst College

Industrial Science and Technology
George F. Farris, Rutgers Univ.

Information, Computing, and Communication
Laxmi N. Bhuyan, Univ. of California, Riverside • Doris L. Carver, Louisiana State Univ., Baton Rouge • Donald P. Greenberg, Cornell Univ. • Jose-Marie Griffiths, Univ. of Pittsburgh • Donald H. Kraft, Louisiana State Univ., Baton Rouge • Ray R. Larson, Univ. of California, Berkeley • Steve Lawrence, NEC Research Institute, Princeton, NJ • John L. Schnase, NASA Goddard Space Flight Ctr., Greenbelt, MD • Bart Selman, Cornell Univ. • Moshe Vardi, Rice Univ. • Donald J. Waters, Andrew W. Mellon Foundation, New York City

Linguistics and Language Science
D. Terence Langendoen, Univ. of Arizona • Philip E. Rubin, National Science Foundation

Mathematics
Ronald R. Coifman, Yale Univ. • Jack D. Cowan, Univ. of Chicago • Fan Chung Graham, Univ. of California, San Diego • Frank Charles Hoppensteadt, Arizona State Univ. • H. Jeff Kimble, California Institute of Technology • Jeffrey C. Lagarias, AT&T Shannon Labs., Florham Park, NJ • Edward Nelson, Princeton Univ.

Medical Sciences
Richard F. Ambinder, Johns Hopkins Univ. • Joel Barry Baseman, Univ. of Texas Health Science Ctr., San Antonio • Christine A. Biron, Brown Univ. • Richard J. Courtney, Pennsylvania State Univ. College of Medicine, Hershey • Albert de la Chapelle, Ohio State Univ., Columbus • Mark Donowitz, Johns Hopkins Univ. • Stephen M. Feinstone, Food and Drug Administration, Bethesda, MD • Eli Glatstein, Univ. of Pennsylvania Hospital • Peter M. Howley, Harvard Medical School, Boston • Eric Hunter, Univ. of Alabama, Birmingham • Lindsey Marion Hutt-Fletcher, Univ. of Missouri, Kansas City • Richard L. Kempson, Stanford Univ. • Elise Kohn, National Cancer Institute • Timothy James Ley, Washington Univ. • Dennis J. O'Callaghan, Louisiana State Univ., Shreveport • Don Watson Powell, Univ. of Texas Medical Branch, Galveston • Owen M. Rennert, National Institute of Child Health and Human Development • Priscilla Blakeney Wyrick, East Tennessee State Univ.

Neuroscience
David Jeffrey Anderson, California Institute of Technology • Pat R. Levitt, Univ. of Pittsburgh • John H. R. Maunsell, Baylor College of Medicine • Richard K. Nakamura, National Institute of Mental Health • Steven E. Petersen, Washington Univ. • Larry William Swanson, Univ. of Southern California • Gary L. Westbrook, Oregon Health Sciences Univ., Portland • Nancy Sabin Wexler, College of Physicians and Surgeons, New York City • Huda Y. Zoghbi, Baylor College of Medicine

Pharmaceutical Sciences
Richard F. Borch, Purdue Univ. • David C.-K. Chu, Univ. of Georgia • Susan M. Daluge, Glaxo Smith Kline, Inc., Research Triangle Park, NC • Charlene A. McQueen, Univ. of Arizona • Roy D. Schwarz, Pfizer Global Research and Development, Ann Arbor, MI

Physics
David E. Aspnes, North Carolina State Univ. • James D. Bjorken, Redwood City, CA • Karl W. Böer, Univ. of Delaware • Elias Burstein, Univ. of Pennsylvania • J. Robert Dorfman, Univ. of Maryland, College Park • Igor E. Dzyaloshinskii, Univ. of California, Irvine • Arthur J. Epstein, Ohio State Univ., Columbus • Frank Franz, Univ. of Alabama, Huntsville • Arthur J. Freeman, Northwestern Univ. • Claus-Konrad Gelbke, Michigan State Univ. • Yogendra M. Gupta, Washington State Univ. • Victor E. Henrich, Yale Univ. • Chris J. Jacobsen, State Univ. of New York, Stony Brook • John D. Joannopoulos, Massachusetts Institute of Technology • William T. Oosterhuis, U.S. Dept. of Energy, Germantown, MD • Julia M. Phillips, Sandia National Labs. • S. Peter Rosen, U.S. Dept. of Energy, Germantown, MD • Thomas P. Russell, Univ. of Massachusetts, Amherst • William F. Saam, Ohio State Univ., Columbus • Costas M. Soukoulis, Iowa State Univ. • J. Pace VanDevender, Sandia National Labs.

Psychology
Jeanne Brooks-Gunn, Columbia Univ. • Merrill F. Garrett, Univ. of Arizona • Janice K. Kiecolt-Glaser, Ohio State Univ., Columbus • Alan G. Kraut, American Psychological Society, Washington, DC • Charles A. Nelson, Univ. of Minnesota, Minneapolis • Randy J. Nelson, Ohio State Univ., Columbus • Denise C. Park, Univ. of Michigan • Elizabeth Anya Phelps, New York Univ. • Lynn C. Robertson, Univ. of California, Berkeley • Elizabeth S. Spelke, Harvard Univ. • Jeremy M. Wolfe, Brigham and Women's Hospital, Boston

Social, Economic, and Political Sciences
Hans P. Binswanger, The World Bank, Washington, DC • Barbara Entwisle, Univ. of North Carolina, Chapel Hill • Daniel S. Nagin, Carnegie Mellon Univ. • Joseph P. Newhouse, Harvard Medical School, Boston • Harriet B. Presser, Univ. of Maryland, College Park • Ortwin Renn, Ctr. for Technology Assessment, Stuttgart, Germany • Alvin Richard Tarlov, Rice Univ.

Societal Impacts of Science and Engineering
Barbara Lyn Belmont, Gardena, CA • David H. Guston, Rutgers Univ. • Jeremy Sugarman, Duke Univ. • Charles Weiss Jr., Georgetown Univ.

Statistics
David Haussler, Univ. of California, Santa Cruz • Robert E. Kass, Carnegie Mellon Univ. • Nancy Margaret Reid, Univ. of Toronto • Wing Hung Wong, Harvard Univ.