

NAOMI ORESKES

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EDUCATION

- 1990 Ph.D. Graduate Special Program in Geological Research and History of Science
Stanford University, Stanford, California, USA.
- 1981 B.Sc., First Class Honours: Mining Geology, The Royal School of Mines
Imperial College, University of London, England.

EMPLOYMENT

- 1998- Associate Professor, Department of History and Program in Science Studies
University of California, San Diego
- Autumn, 2001 Visiting Associate Professor, Department of History of Science, Harvard University
- 1996-98 Associate Professor, History and Philosophy of Science
Gallatin School of Individualized Study, New York University
- 1991-96 Assistant Professor of Earth Sciences and Adjunct Asst. Professor of History
Dartmouth College, Hanover, New Hampshire.
- 1990-91 Visiting Asst. Professor of Earth Sciences and Visiting Asst. Professor of History
Dartmouth College, Hanover, New Hampshire
- 1984-89 Research Assistant, Geology Department, and
Teaching Assistant, Depts. of Geology, Philosophy, and Applied Earth Sciences Stanford University.
- 1981-84 Geologist, Western Mining Corporation, Adelaide, Australia.

MAJOR HONORS

- American Philosophical Society Sabbatical Fellowship, 2001-2002.
- National Science Foundation Young Investigator Award, 1994-1999.
- National Endowment for the Humanities Fellowship for University Teachers, 1993-94.
- Society of Economic Geologists Lindgren Prize for outstanding work by a young scientist, 1993.
- Ritter Memorial Fellowship in History of Marine Sciences, Scripps Institution of Oceanography, 1994.
- Listed, Who's Who in American Science and Engineering, Who's Who in the West.

OTHER HONORS AND AWARDS

- **FACULTY:** History of Science Society, Women in Science Best Paper Prize, 2000; Forum for the History of Science in America, Best Paper Prize, 1997; Geological Society of America 29th International Geological Congress Travel Grant, Kyoto, Japan, 1992.
- **GRADUATE:** Mellon Foundation New Directions Fellowship to “encourage fresh contributions of knowledge and curricular activities [in] the arts and sciences,” Stanford University, 1988-1989.; Geological Society of America, Penrose Grant, 1987; Chevron Fellowship, Stanford University, 1984-1986.
- **UNDERGRADUATE:** Imperial College, Watts Medal (Geology), 1981; University of London Sir Henry Miers Mineralogy Prize, 1981; Royal Society of Arts (London) Silver Medal for Scholarship and Service, 1981; Imperial College Geology Department Jonathan Callaghan First Year Prize, 1979.

PROFESSIONAL SOCIETIES

American Geophysical Union; Geological Society of America (Fellow); Geological Society of London; Society of Economic Geologists; History of Earth Sciences Society; History of Science Society; International Commission for the History of Geology.

PROFESSIONAL ACTIVITIES

Editorial Boards ISIS, 2001- ; Reviews of Geophysics (Associate Editor) 2001-2003; Earth Sciences History 1998- , Economic Geology 1993-1998.

Councillor History of Earth Sciences Society, 1998-1999.

Committees American Association for the Advancement of Science, History Committee, 1996-1999; American Geophysical Union, History Committee, 1996- present; U.S. National Committee on Geology, National Research Council, Member, 1994-96; U.S. National Committee for the History of Geology, National Research Council, Secretary, 1994-96; National Science Foundation, Education and Human Resources Committee of Visitors, 1994-95

Visiting Committee, to review Harvard University History of Science Department, Spring 2003

Steering Committee WGBH, *Lives in Science*, 1999- .

Panel Member, *National Science Foundation History of Science and Technology*, Spring 2000.

Consulting Historian Oxford Companion to the History of Science 1999-2000; American Institute of Physics Collaboration Project, 1990-1999; WGBH Science Odyssey Series, 1997-1998.

Consultant U.S. National Academy of Sciences, Workshop , “Principles and Operational Strategies for Repository Staging Systems,” September 2001.

Consultant U.S. Nuclear Waste Technical Review Board, September 1999.

Consultant U.S. Environmental Protection Agency, Lead Model Validation Project, 1996-1997.

External Examiner Melbourne University, 1995, 1997.

Conference Organizer Geological Society of America Penrose Conference: “From the inside and the outside: Interdisciplinary Perspectives on the History of the Earth Sciences.” March 1994.

Seminar Leader Dibner Foundation for the History & Philosophy of Science, Summer Institute July 1994.

President De la Beche Club (Imperial College Geological Society), 1979-1980.

MANUSCRIPTS, GRANTS, AND PAPERS REVIEWED

Manuscripts: AGU Press; Ecological Modelling; Geology; Economic Geology; ISIS; History of Earth Sciences; Hyle; Johns Hopkins University Press; Blackwell Press; Mineralium Deposita; International Association on the Genesis of Ore Deposits; Science; University of Chicago Press; University of California Press.

Grants: National Science Foundation (Geochemistry and Petrology, Science and Technology Studies, Instrumentation and Facilities, and Education and Human Resources); National Environment Research Council (U.K.).

Papers for National Meetings: Geological Society of America

MEDIA APPEARANCES

WGBH television, “A Science Odyssey: Origins,” aired nationwide on January 15, 1998;

UCSD television, “Guestbook” interview with Dr. Helen Caldicott, April 21, 1999.

KPBS radio, San Diego, “These Days,” with Tom Fudge, March 8, 2001.

SPONSORED RESEARCH

History and Philosophy of Science

Title: The Military Roots of Basic Science: American Oceanography in the Cold War and Beyond

Funding agency: National Science Foundation SBE 01-15260

Duration of Support: 2002-2004.

Title: Sabbatical Fellowship

Funding agency: American Philosophical Society

Duration of Support: Spring 2002.

Title: National Science Foundation Young Investigator Award for Geology and History of Science.

Funding agency: National Science Foundation.

Duration of Support: 1994-1999. (Awarded 1993).

Title: The rejection of continental drift.

Funding agency: National Science Foundation, SBE 92-22597.

Duration of support: April 1994-June 1995.

Title: The rejection of continental drift.

Funding agency: National Endowment for the Humanities, Fellowship for University Teachers

Duration of support: September 1993-April 1994.

Earth Science

Title: Acquisition of cathodoluminescence, spectrophotometry, and microsampling capabilities for the study of large-scale ore-forming systems.

Funding agency: National Science Foundation, EAR 93-17213.

Duration of support: 1994-1996.

Title: Origin of magnetite deposits at El Laco, Chile: An analogue for giant Fe-REE deposits of the Proterozoic? with Research Experience for Undergraduates [REU] Supplements (1993, 1994)

Funding agency: National Science Foundation EAR 92-19887.

Duration of support: 1993-1995.

Title: Sphalerite geochronometry at the Lisheen Zn-Pb deposit, Ireland.

Funding agency: Chevron Corporation of Ireland.

Duration of support: 1992-1993.

Title: Reading materials for innovative approaches to introductory geology.

Funding Agency: New England Consortium for Undergraduate Science Education (NECUSE).

Duration of Support: 1990-1991.

TEACHING ACTIVITIES—Courses

University of California Science and Technology in the 20th Century; Origins of the Atomic Age; Introduction to Science Studies; Historical Perspectives on Women in Science.

New York University The Quest for Knowledge; Origins of the Atomic Age; The Notion of Truth; The Darwinian Legacy; Fate of the Earth.

Dartmouth College *Earth Sciences*: Fate of the Earth; Materials of the Earth; Geochemistry of Ore Deposits; Philosophy of Natural Sciences; *History* Origins of the Atomic Age; *Women's Studies* Sex, Gender, and Scientific Discovery.

TEACHING ACTIVITIES—Graduate Research Advising

Victoria Carlson-Foszcz, Dartmouth M.S. (1991) “Mobility of rare earth elements in the Ophir region, San Juan Mountains, Colorado.”

Helen Mango, Dartmouth Ph.D. (1992) “Origin of epithermal Ag-Au-Cu-Pb-Zn mineralization on the Veta Madre, Guanajuato, Mexico.”

Amy Larson, Dartmouth M.S. (1994) / Ph.D. (1996). “Evidence of pneumatolytic processes in the genesis of magnetite deposits at El Laco, Chile.”

Katherine Bateman, Dartmouth M.A.L.S. (1994). “Built around a uterus: Historical Origins of the 'Limited Energy Theory of Women's Physiology.’”

Melody Brown, Dartmouth M.S. (1995) “Geological and numerical analysis of paleofluid-flow in carboniferous Ireland: Developing a genetic model for the carboniferous carbonate-hosted Irish Zn-Pb ores.”

Maria Bundy, Dartmouth M.S. (1996) “REE content of apatites at Ophir, Colorado: A source of aqueous REEs in acid mine drainage?”

Sossity Sheets, Dartmouth M.S. (1997) “Chemistry of fluid inclusions at El Laco, Chile: Implications for ore genesis.”

Barbara DeFelice, Dartmouth M.A.L.S. (2000) “Geological theory and arctic exploration in the early 20th century.”

TEACHING ACTIVITIES—Undergraduate Research Advising

David Kaiser, Dartmouth B.A. Waterhouse Research in history of science, published as:

- “More roots of complementarity,” *Studies in the History and Philosophy of Science*, 23: 213-239, 1992.
- “Neils Bohr's conceptual legacy in contemporary particle physics,” *Neils Bohr and Contemporary Philosophy*, Jan Faye and Henry Folse, eds., pp. 257-268.
- “Bringing the human actors back on stage: The personal context of the Einstein-Bohr debate.” *British Journal for the History of Science*, December 1994.

Keith Rainville, Dartmouth B.A., Honors thesis (1994) Advisor: “Geothermometry of fluid inclusions at El Laco, Chile.” Published as part of:

- Oreskes, N., Rhodes, A.L., Rainville, K., Sheets S., Espinoza, S., and Zentilli, M., 1994. “Origins of magnetite deposits at El Laco, Chile: New evidence from field studies, fluid inclusions, stable isotopes, and fission track dating. *Geological Society of America Abstracts with Programs*, vol. 26, no. 7, p. A-379.

Jeffrey Furr, Dartmouth B.A., Honors thesis (1994) Co-advisor: “Gravity evidence for the sub-surface morphology of magnetite deposits at El Laco, Chile.”

Sossity Sheets, Dartmouth B.A., Dartmouth Presidential Scholar (1993-94) Advisor: “Characterization of fluid inclusions at El Laco, Chile.” Published as part of:

• Oreskes, N., Rhodes, A.L., Rainville, K., Sheets S., Espinoza, S., and Zentilli, M., 1994. "Origins of magnetite deposits at El Laco, Chile: New evidence from field studies, fluid inclusions, stable isotopes, and fission track analysis." *Geological Society of America Abstracts with Programs*, vol. 26, no. 7, p. A-379.

Sossity Sheets, Dartmouth B.A., Senior Honors thesis (1995) Advisor: "SEM analysis of apaites from El Laco, Chile."
Published as part of:

• Oreskes, N., Rhodes, A.L., Sheets, S. A., and Espinoza, S., 1995. "Evidence for formation of magnetite by metasomatic alteration of host rock andesite: El Laco, Chile, Part I: Field relations and alteration assemblages," *Geological Society of America Abstracts with Programs*, vol. 27, no. 6, p. A-467.

Jessica Murray, Dartmouth B.A. Dartmouth Presidential Scholar (1994-95) Advisor: "Petrography of iron deposits at El Laco, Chile."

Rosalie Kasowki, Dartmouth B.A. Senior Honors thesis (1995). Advisor: "Cathodoluminescence of apatite from El Laco, Chile."

Rachel Roisman, Dartmouth B.A. Senior Fellow Honors Program (1995-96). Advisor: "Victimizing choices? Prenatal sex determination and sex selective abortions in India."

Jessica Murray, Dartmouth B.A. Senior Honors thesis (1996). Advisor: "Controls on the use of cathodoluminescence in the study of apatite." Published as:

• Murray, J. and Oreskes, N., 1997. "Uses and Limitations of Cathodoluminescence in the study of apatite paragenesis." *Economic Geology* vol. 92, pp. 368-376.

Randall Nicholson, UCSD B.A. Senior Honors thesis (2000). Advisor: "Creating a climate of public opinion in support of the bombings of Hiroshima and Nagasaki."

University Service (selected activities)

University of California Faculty co-chair, Chancellor's Advisory Committee on the Status of Women, Executive Committee (1999-2001), Member, Vice-Chancellor's Task Force on Gender Equity (2001); Center for Environmental Research and Training (1999-); Executive Committee, Science Studies Program (1999-); Scripps Institution of Oceanography Heritage Committee (1999-).

New York University Gallatin Curriculum Committee, 1996-97; College of Arts and Sciences NSF initiative on undergraduate science and math education reform, 1997; Gallatin Dean Search Committee, 1997-98.

Dartmouth College Ethics Institute Faculty Advisor (1994-95); Women in Science Program Faculty Sponsor (1992-93); Women's Studies Steering Committee (1992-1994); University Seminars: Feminist Inquiry (1990-1995); Two Cultures (1990-1995); Teaching Science (1993-1995); Sloan Foundation Summer Science Teaching Institute (1994); Dartmouth College Committee on Organization and Policy (1996-97).

SCHOLARLY WORK: HISTORY AND PHILOSOPHY OF SCIENCE

Books and Edited Volumes

- Oreskes, Naomi, 1999. *The Rejection of Continental Drift: Theory and Method in American Earth Science* (New York: Oxford University Press).
- Oreskes, Naomi and James R. Fleming, eds. 2000. "Perspectives on Geophysics," Special Issue of *Studies in the History and Philosophy of Modern Physics*, 31B, September 2000.
- Oreskes, Naomi, ed., with Homer E. Le Grand, 2001. *Plate Tectonics: An Insider's History of the Modern Theory of the Earth* (Boulder: Westview Press), paperback edition February 2003.

Book chapters

- Oreskes, Naomi, 1997. "Testing models of natural systems: Can it be done?" in *Structures and Norms in Science: Volume Two of the Tenth International Congress of Logic, Methodology, and Philosophy of Science*, edited by M.L. Chiara et al. (Dordrecht: Kluwer, 1997) pp. 207-217.
- Oreskes, Naomi, 2000. "Why believe a computer? Models, measures, and meaning in the natural world," in *The Earth Around Us: Maintaining a Livable Planet*, edited by Jill S. Schneiderman (San Francisco: W.H. Freeman and Co.), pp. 70-82.
- Oreskes, Naomi, 2000. "Why predict? Historical perspectives on prediction in the earth sciences," in *Prediction: Decision-making and the Future of Nature*, edited by Daniel Sarewitz, Roger Pielke, Jr., and Radford Byerly, Jr. (Washington, D.C.: Island Press), pp. 23-40.
- Oreskes, Naomi and Kenneth Belitz, 2001. "Philosophical Issues in Model Assessment, in *Model Validation: Perspectives in Hydrological Science*, edited by M.G. Anderson and P.D. Bates (London: John Wiley and Sons, Ltd.), pp. 23-41.
- Oreskes, Naomi and Ronald E. Doel, 2002. "Physics and chemistry of the earth," in *The Cambridge History of Science, Volume V: Modern Physical and Mathematical Sciences*, edited by Mary Jo Nye, (Cambridge: Cambridge University Press), 538-552.
- Oreskes, Naomi, 2002. Gravity surveys in the 'permanent' ocean basins: An instrumental chink in a theoretical suit of armor," in *Oceanographic History: The Pacific and Beyond*, edited by Keith R. Benson and Philip F. Rehbock (Seattle: University of Washington Press), pp. 502-510.
- Oreskes, Naomi, 2003. "The role of quantitative models in science," in *The Role of Models in Ecosystem Science*, edited by Charles D. Canham, Jonathan J. Cole, and William K. Lauenroth (Princeton: Princeton University Press), in press.

Journal articles

- Oreskes, Naomi, 1988. "The rejection of continental drift," *Historical Studies in Physical Sciences*, vol. 18, no. 2, p. 311-348.
- Oreskes, Naomi, 1994. "Weighing the earth from a submarine: The S-21 expedition," in *The Earth, the Heavens, and the Carnegie Institution of Washington: Historical Perspectives after Ninety Years*, Gregory Good, ed., American Geophysical Union History of Geophysics Series, vol. 5, p. 53-68.
- Oreskes, Naomi, Kristin Shrader-Frechette and Kenneth Belitz, 1994. "Verification, validation, and confirmation of numerical models in the earth sciences," *Science*, vol. 263, pp. 641-646.
[Reprinted in *Transactions of the Computer Measurement Group*, vol. 84, pp. 85-92].
- Oreskes, Naomi, 1996. "Objectivity or heroism? On the invisibility of women in science," *OSIRIS*, vol. 11, pp. 87-113.
[Winner of 1997 Forum for the History of Science in America Best Paper Prize and the 2000 History of Science Society Women in Science Prize]

- Oreskes, Naomi, 1998. "Evaluation (not validation) of quantitative models, *Environmental Health Perspectives*, vol. 106, supp. 6, pp. 1453-1460.
- Oreskes, Naomi, 2000. "Laissez-tomber? Women's work and military patronage in twentieth century oceanography," *Historical Studies in the Physical and Biological Sciences*, vol. 30, pp. 373-392.
- Oreskes, Naomi and James R. Fleming, 2000. "Why Geophysics?" *Studies in the History and Philosophy of Modern Physics*, vol. 31B, pp. 253-257.
- Oreskes, Naomi and Ronald Rainger, 2000. "Science and security before the atomic bomb: The loyalty case of Harald U. Sverdrup," *Studies in the History and Philosophy of Modern Physics*, vol. 31B, pp. 309-369.
- Oreskes, Naomi, 2001. "Getting oceanography done." *Earth Sciences History* vol. 19: 37-43.

Popular articles

- Oreskes, Naomi, 1998. La lente plongée vers le fond des océans," *Science et Vie*, March, pp. 84-90.
- Oreskes, Naomi and Rebecca Oreskes, 2001. "Controlling Nature: Is Science to Blame?" *International Journal of Wilderness* 7(1): 35-38.

Book reviews, encyclopedia articles, & miscellany (excluding abstracts).

- Oreskes, Naomi, 1989. "The Great Devonian Controversy," review of paperback edition, *Historical Studies in Physical Sciences*, vol. 19, part 2, p. 411-412.
- Oreskes, Naomi, 1990. "Drifting Continents and Shifting Theories" [Review]. *British Journal for the History of Science*, vol. 23, no. 1, 113-115.
- Oreskes, Naomi, 1991. "Drifting Continents and Colliding Paradigms" [Review]. *ISIS*, vol. 82, no. 4, p. 775-776.
- Oreskes, Naomi, 1993. "The Laws of Biology," Letter, *American Scientist*, vol. 81, p. 411.
- Oreskes, Naomi, 1993. "Victor Moritz Goldschmidt: Father of Modern Geochemistry" [Review]. *Economic Geology*, vol. 88, no. 4, pp. 218-220.
- Laporte, Leo F., Naomi Oreskes, and Kenneth L. Taylor, 1994. "Penrose Conference Report: From the inside and the outside: Interdisciplinary perspectives on the history of the earth sciences," *GSA Today*, vol. 4, no. 8, pp. 203-204
- Oreskes, Naomi, 1997. "Thinking about the Earth: One way or several?" [Review Symposium]. *Metascience*, New Series Issue 11, pp. 11-15.
- Oreskes, Naomi, 1998. *Garland Encyclopedia of the Geosciences*, G. Good, ed., Entries: "Isostasy," pp. 488-491, and "The Scopes Trial," p. 731-732.
- Oreskes, Naomi, 1998. "Gender and Scientific Authority," [Review]. *Isis* v. 89, pp. 522-523.
- Oreskes, Naomi, 1999. "Living with uncertainty, learning from mistakes: Reply to Victor Baker and Mott Greene [review of *The Rejection of Continental Drift*]," *Earth Sciences History* v. 18, no. 2, pp. 344-350.
- Oreskes, Naomi, 2000. *MacMillan Encyclopedia of the Earth Sciences*: Entry: "Charles Schuchert."
- Oreskes, Naomi, 2000. *American National Biography*, J. Garrity, ed. Entries: "Joseph Barrell," "William Bowie," "John Hayford" and "Charles Schuchert."
- Oreskes, Naomi, 2001. "Reflections on the American Rejection of Continental Drift: A Reply to Ursula Marvin." *Metascience* 10: 217-222.
- Oreskes, Naomi, 2001. "Earth Matters: The Earth Sciences, Philosophy, and the Claims of Community [review]," *Geotimes* March, p. 34.

- Oreskes, Naomi 2002. "Earth Sciences, History of," *Encyclopedia of Physical Science and Technology*, Third Edition, Volume 4 (San Diego: Academic Press), pp. 761-773.
- Oreskes, Naomi 2002. "Global Plate Tectonics," *Encyclopedia of Global Environmental Change*, edited by Michael C. MacCracken and John S. Perry (Chichester: John Wiley and Sons), pp.410-411.
- Oreskes, Naomi 2002. "Continental Drift," *Encyclopedia of Global Environmental Change*, edited by Michael C. MacCracken and John S. Perry (Chichester: John Wiley and Sons), pp.321-325

SCHOLARLY WORK: GEOLOGY

Journal articles

- Oreskes, Naomi and Einaudi, M.T., 1990. "Origin of LREE-enriched hematite breccias at the Olympic Dam, Cu-U-Au-Ag deposit, Roxby Downs, South Australia," *Economic Geology*, vol. 85, no. 1, p. 1-28.
- Einaudi, M.T., and Oreskes, N., 1990. "Progress towards an occurrence model for Proterozoic iron oxide (Cu,U,REE,Au) deposits—A comparison between the ore provinces of South Australia and SE Missouri," invited contribution to Pratt, Walden P., and Sims, P.K., eds., *The Midcontinent--Permissive Terrain for an Olympic Dam deposit?* U.S.G.S. Bulletin no. 1932, p. 58-69.
- Reeve, J.S., Smith, R.N., Cross, K.C., and Oreskes, N., 1990. "The Olympic Dam copper-uranium-gold-silver deposit," invited contribution to Hughes, Frank, ed., *Geology of Mineral Deposits of Australia and Papua New Guinea*, Australian Institution of Mining and Metallurgy Monograph 14, p. 1009-1035.
- Mango, Helen, Zantop, Half, and Oreskes, Naomi, 1991. "A fluid inclusion and isotope study of the Rayas Ag-Au-Cu-Pb-Zn mine, Guanajuato, Mexico," *Economic Geology*, vol. 86, no. 7, p. 1546-1553.
- Oreskes, Naomi and Einaudi, M.T., 1992. "Origin of hydrothermal fluids at Olympic Dam: Preliminary results from fluid inclusions and stable isotopes," *Economic Geology*, vol. 87, no. 1, p. 64-90.
- Hitzman, M.W., Oreskes, Naomi, and Einaudi, M.T., 1992. "Geologic characteristics and tectonic setting of Proterozoic Fe-REE deposits," *Precambrian Research*, vol. 58, p. 241-287.
- Oreskes, Naomi and Hitzman, M.W., 1993. "A model for the origin of 'Olympic Dam-type' deposits," in *Mineral Deposit Modeling*, Geological Association of Canada Special Paper 40, p. 615-633.
- Rhodes, A.L., and Oreskes, Naomi, 1994. The magnetite "lava flows (?)", El Laco, Chile: New evidence for formation by vapor transport. *7º Congreso Geológico Chileno Actas Volumen II*, pp. 1501-1505; Universidad de Concepcion, Departamento de Ciencias de la Tierra.
- Murray, Jessica R. and Oreskes, Naomi, 1997. "Use and limits of cathodoluminescence in the study of apatite paragenesis." *Economic Geology*, vol. 92, pp. 368-376.
- Rhodes, A.L., Oreskes, Naomi, and Sheets, Sossity, 1999. "Geology and REE geochemistry of the magnetite deposits at El Laco, Chile." *Economic Geology Special Publication No. 7: Geology and Ore Deposits of the Central Andes*, pp. 299-332.
- Rhodes, A.L., and Oreskes, Naomi, 1999. "Oxygen isotope composition of magnetite deposits at El Laco, Chile: Evidence of formation from isotopically heavy fluids," *Economic Geology Special Publication No. 7: Geology and Ore Deposits of the Central Andes*, pp. 333-351.

Book reviews, encyclopedia articles, & miscellany (excluding abstracts).

- Oreskes, Naomi, 1993. "Acceptance of the Lindgren Award for 1993," *Economic Geology*, vol. 88, no. 7, p. 1928-1929.
- Oreskes, Naomi, 1996. "Mineral Resources, Economics, and the Environments: A Review," *Economic Geology*, vol. 90, p. 1350.

Oreskes, Naomi, 1998. "Hydrothermal mineral deposits and hydrothermal alteration," *MacMillan Encyclopedia of the Earth Sciences*.

Oreskes, Naomi, 1998. "Metamorphic mineral deposits," *MacMillan Encyclopedia of the Earth Sciences*.

INVITED LECTURES

"Geology of the Olympic Dam Copper-Uranium-Gold Deposit,"

- U.S. Geological Survey, Branch of Western Mineral Resources, Menlo Park, CA. Jan. 1986.
- U.S. Geological Survey Branch of Central Mineral Resources, Denver, CO. Feb. 1988.
- Peninsula Geological Society, Palo Alto, California, November 1989.
- Geology Department Lecture Series, University of Vermont, Burlington, VT, November 1990.
- Friends of Ore Deposits Lecture Series, U.S. Geological Survey, Reston, VA Nov. 1990.
- Gold Geology of Maar Diatremes, Randol at MinExpo '92, Las Vegas, NV Oct. 1992.

"The Rejection of Continental Drift: Theory and Method in American Earth Science."

- History of Science Society Annual Meeting, Pittsburgh, PA, October 1989.
- Department of Geology, University of Maryland, August 1990.
- Ritter Memorial Lecture, Scripps Institution of Oceanography, March 1994.
- University of California, San Diego, screened on UCSD television station, March 1994.
- University of Washington, Department of Geological Sciences, March 1995.
- University of Oklahoma, Department of History of Science, March 1995.
- Princeton University, Department of Geological Sciences, March 1996.
- Five Colleges Lecture, Smith College, Northampton Massachusetts, February 1999.
- Cascade Volcano Observatory, Portland, Washington, May 2001
- U.S. Air Force Research Laboratory, Hanscom Air Force Base, MA, January 2002.

"From Fact to Theory: American Geological Practice, 1922-1933,"

- Department of History, University of California at Los Angeles, March 1991.
- Department of Earth and Planetary Sciences, Harvard University, May 1991.

"The Right Choice? Historical Perspectives on Women in Science," invited speaker,
Women in Science Project Kick-Off meeting, Dartmouth College, September 1991.

"Unity, Gender, and the Authority of Science: Case studies from American Geology, 1922-1933,"
Science, Technology and Society Lecture Series, Franklin and Marshall College, Feb. 1992.

"Gravity Surveys in the 'Permanent' Ocean Basins: An Instrumental Chink in a Theoretical Suit of Armor," invited
speaker, Plenary Session, *Continents vs. Oceans in the Earth Sciences Revolution*, Fifth Intl. Congress on the
History of Oceanography, La Jolla, CA, July 1993.

"Objectivity or Heroism? On the Invisibility of Women in Science,"

- Department of Science and Technology Studies, RPI, Troy, NY, Sept. 1993.
- Feminist Inquiry Seminar, Dartmouth College, March 1994;
- University of California, San Diego, Science Studies Program, March 1994.

"Why Believe a Computer? Verification, Validation, and Confirmation of Numerical Models in the Earth Sciences"

- Scripps Institution of Oceanography, Institute for Geophysics and Planetary Physics, Mar. 1994.
- Department of Computer Science and Electrical Eng., George Washington University, Nov. 1994.
- Georgia Institute of Technology, Department of Earth and Atmospheric Sciences, April 1995.
- Carleton College, Luce Lecture Series on Human Dimensions of Global Change, Feb. 1996.

"Did Science Kill Nature? Sex, Gender, and the Scientific Revolution,"

- Dartmouth Alumni College, Aug. 1994.

"Work or Glory? The Image and Reality of Women in Science"

- Chancellor's Advisory Committee on the Status of Women and Science Studies Program,
University of California, San Diego, Feb. 1995.

"Looking for a Few Good Women: Military Patronage and Scientific Labor at the Scripps Institution of Oceanography."

- U.S. Naval Research Laboratory, Washington, DC., April 1997

“Evaluation (Not Validation) of Quantitative Models.”

- U.S. Environmental Protection Agency, Lead Model Validation Workshop, Research Triangle Park, NC, Oct. 1996.

“Truth or Consequence? Trade-offs in Building Computer Models of Complex Natural Systems.”

- U.S. Geological Survey, Menlo Park, CA, March 1997.

“When Good Models Turn Out to be False: Sobering Examples from the History of Science,”

- Santa Fe Institute, Santa Fe, NM, January, 1998.

“Model Assessment: Where Do We Go from Here?”

- Keynote speaker, U.S. Environmental Protection Agency, National Research Center for Statistics and the Environment, Workshop on Quality Assurance of Environmental Models, Univ. of Washington, September 1999.

“Conceptual Issues in Model Assessment: What can we learn from past mistakes? “

- Los Alamos National Laboratory, Los Alamos, NM, January 2000.
- U.S. Army Conference on Applied Statistics, Houston, TX., October 2000.

“Science and Security Before the Atomic Bomb: The Loyalty Case of Harald Ulrik Sverdrup”

- University of California, Los Angeles, History Department, March 2000
- Oregon State University, Horning Lecture Series, Corvallis, OR., May 2000
- Santa Fe Institute Public Lecture Series, Santa Fe, NM, March 2001
- Physics Department, New Mexico State University, Las Cruces, NM, March 2001
- Caltech Science and Society Lecture Series, Pasadena, CA, June 2001.
- Cornell University, Department of Science and Technology Studies, October 2001.

“From Scaling to Simulation: Changing Meanings and Ambitions of Models in the Earth Sciences”

- History of Science Society Annual Meeting, Vancouver, Canada, November 2000.
- Princeton University, Workshop on Models and Model Systems, Princeton NJ, February 2001.
- Harvard University, History of Science Department, Cambridge MA, March 2001.
- Max Planck Institut für wissenschaftsgeschichte, “Digital Workbench” workshop, Berlin, Germany, December 2001.

“Nuclear Waste Disposal: Bridging the Gap between Science and Policy”

Invited Panelist, Geological Society of America, Reno NV, November 2000

“The Role of Quantitative Models in Science”

Keynote speaker, Cary conference IX: Understanding Ecosystems: The Role of Quantitative Models in Observation, Synthesis, and Prediction, Millbrook NY, May 2001.

“From Hydrogen Bombs to Hydrothermal Vents: The Discovery of Black Smokers on the Sea Floor,”

- Cornell University, Peace Studies Workshop on Science and the Military, October 2001
- Harvard University, History of Science, Physical Sciences Research Group, November 2001
- Pennsylvania State University, Program in Science, Technology, and Medicine, January 2002
- Max Planck Institut für Chemie, Mainz, Germany, October 2002.
- Princeton University, History Department Workshop on *Science across the Seas*, March 2003.
- Columbia University, Earth Institute, Science, Technology, and Global Development Seminar, March 2003.
- University of Pittsburgh, History and Philosophy of Science Department Colloquium Series, April 2003.

“Cold War Secrecy and the Development of Plate Tectonics”

- Invited Speaker, GEO2002, Würzburg, Germany, October 2002.

“Proof is over-rated” Invited speaker, Symposium on “The Politicization of Science: Learning from the Lomborg Affair”

American Association for the Advancement of Science, Denver, CO, February 2003.