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THOMAS J. WILBANKS

TELEPHONE: Office: (865) 574-5515
Home: (865) 690-2266

PERSONAL DATA: Born August 4, 1938, Texarkana, Arkansas
Married, three children

PRESENT POSITION: Corporate Research Fellow and Leader, Global Change and
Developing Country Programs, Oak Ridge National Laboratory

EDUCATION: B.A., Trinity University, May 1960
M.A., Syracuse University, January 1967
Ph.D., Syracuse University, September 1969

PROFESSIONAL HISTORY

1986 - Corporate Research Fellow and Leader, Global Change and Developing
Country Programs, Oak Ridge National Laboratory

1998 - 2002 Research Associate, Belfer Center for Science and International Affairs,
Harvard University

2000 - 2002 Acting Co-Director, Oak Ridge Center for Advanced Studies

1983 - Adjunct Professor of Geography, University of Tennessee

1980-1986 Associate Director and Head of Programs and Planning, Energy Division,
Oak Ridge National Laboratory

Fall 1980 and Acting Director, Energy Division, Oak Ridge National Laboratory
Winter 1981

1979-1980 Acting Head, Economic Analysis Section, Oak Ridge National Laboratory

PROFESSIONAL HISTORY (Cont'd)

Fall 1977- 1980	Senior Planner, Energy Division, Oak Ridge National Laboratory
Summer 1974- 1977	Research Fellow, Science and Public Policy Program, The University of Oklahoma
Fall 1973- 1977	Associate Professor and Chair, Department of Geography, The University of Oklahoma
Spring and Summer 1973	Research Director, Syracuse-Yugoslav Project on Environmental Policy Planning, Ljubljana, Yugoslavia (Slovenia)
Fall 1971- 1972	Executive Director, Urban Transportation Institute, Syracuse University
Fall 1969- 1973	Assistant Professor of Geography, Syracuse University
Spring and Summer 1969	Lecturer in Geography, Syracuse University

PUBLICATIONS (excluding reviews and notes):

“Beyond Adaptation to Climate Change: Responding to Multiple Threats and Stresses,” with Robert Kates, *Annals of the Association of American Geographers*, forthcoming 2009.

“Inducing Transformational Energy Technological Change,” in W. Nordhaus and N. Nakicenovic, eds., *Technological Change and Global Warming*, forthcoming 2009.

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“Executive Summary,” *State of Carbon Cycle Research* (SOCCR), co-author, US Climate Change Science Program Synthesis and Assessment Product 2.2, forthcoming 2007.

“Developing Country Responses to Concerns about Climate Change,” in M. Brown and B. Sovacool, eds., *Energy and Society: Twelve Myths about the Environment and Energy Policy in the United States*, Springer, 2007: 341-350.

Challenges in Integrating Mitigation and Adaptation as Responses to Climate Change, with R. Klein and J. Sathaye, co-eds., special issue, *Mitigation and Adaptation Strategies for Global Change*, 12/5 (June 2007).

“Toward an Integrated Analysis of Mitigation and Adaptation: Some Preliminary Findings”, with others, in Wilbanks, Klein, and Sathaye, op. cit.: 713-725

“Integrating Mitigation and Adaptation as Responses to Climate Change: A Synthesis,” with others, in Wilbanks, Klein, and Sathaye, op. cit.: 957-962.

“Stakeholder Involvement in Local Smart Growth: Needs and Challenges,” in M. Ruth, ed., *Smart Growth and Climate Change*, Aldershot, UK: Edward Elgar, 2006: 113-130.

Bridging Scales and Knowledge Systems: Linking Global Science and Local Knowledge in

Assessments, with F. Berkes, D. Capistrano, and W. Reid, co-eds., Washington: Island Press, 2006.

“Introduction,” in Berkes, Capistrano, Reid, and Wilbanks, op. cit.: 11-24.

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“Integrated Analysis of Mitigation and Adaptation as Responses to Concerns about Impacts of Global Climate Change,” with others. ORNL Working Paper, June 2003.

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- "Is Comprehensive Analysis of Critical Interactions Possible?" in G. Daneke, ed., *Energy, Economics, and the Environment* (Lexington, MA: D. C. Heath, 1982), pp. 91-110.
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- Staff contributor to *An Analysis of the ERDA Plan and Program*, Office of Technology Assessment, U.S. Congress (Washington: U.S. Government Printing Office), October 1975.
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PROFESSIONAL PRESENTATIONS:

- “Inducing Transformational Energy Technological Change: Some Non-traditional Perspectives, Energy Modeling Forum, Snowmass, August 2008.
- “Our Climate Is Changing: So What?” University of Oklahoma, May 2008.
- “Managing Science and Technology for Sustainable Development Through Multiscale Collaboration,” Sackler Colloquium on Linking Knowledge with Action for Sustainable Development, National Academies of Science, April 2008.
- “Fundamental Research Priorities to Improve the Understanding of Human Dimensions of Climate Change,” National Research Council Committee on Strategic Advice to the U.S. Climate Change Science Program, Boulder, CO, March 2008.
- “Looking Beyond Immediate Threats to Energy and Environmental Security: What Might We Be Missing?” Summit Meeting on Enhancing Strategic Intelligence and National Security Readiness to Meet Global Energy and Environmental Challenges, Washington, D.C., March 2008.
- “Effects of Climate Change on Energy Production and Use in the United States,” National Summit on Coping with Climate Change, Ann Arbor, MI, May 2007.
- “Effects of Climate Change on Energy Production and Use in the United States,” ELECTRIC POWER Conference, Chicago, May 2007.
- “Scale and Sustainability,” Comeaux Lecture, Arizona State University, February 2007.
- “Our Climate Is Changing: So What?” Great Works Symposium, Drexel University, February 2007.
- “Effects of Climate Change on Energy Production and Use in the United States,” 4th API Conference on the Oil and Gas Industry’s Voluntary Actions to Address Climate Change, December 2006.
- “The Place of Social and Behavioral Science in Environmental Research and Education,” National Science Foundation, October 2006.
- “Urbanization and the Built Environment,” Session on Climate Change, Sustainable Development, and Human Health, Energy Modeling Forum, Snowmass, CO, July 2006.
- “Perspectives on CCSP Goals and Strategic Plan,” National Academies of Science/National Research Council, April 2006.
- “Human-Environmental Interactions as a Challenge for DBASSE:,” National Academies of Science/National Research Council, April 2006.
- “Evaluating the National Assessment,” National Academies of Science/National Research Council, March 2006.

- “Synthesis and Integration,” in session on "Biospheric Monitoring and Ecosystem Forecasts: Sensing the Pulse of the Planet,” American Association for the Advancement of Science, St. Louis, February 2006.
- “Pursuing Global Sustainability in Practice as Well as Theory,” keynote address, joint meeting of IGU Commission on Geography and Public Policy and AAG West Lakes Division, Iowa City, November 2005.
- “Considering a Mix of Mitigation and Adaptation Approaches to Reduce Possible Impacts of Global Climate Change,” University of Iowa, November 2005.
- “Our Climate Is Changing: So What?” Iowa City Foreign Relations Council, Iowa City, November 2005.
- “Our Climate Is Changing: So What? – Research Priorities to Inform Decisions about Appropriate Responses,” Oak Ridge Center for Advanced Studies, July 2005
- “Scale and Technological Change for Energy Sustainability,” Center for International Development, Harvard University, December 2004.
- “Human Vulnerabilities to Disasters Related to Global Climate Change,” NAS/NRC Workshop on Natural Disaster Research and the Social Sciences,” Washington, D.C., August 2004.
- “Considering the Mix of Mitigation and Adaptation Approaches to Avoid Key Impacts,” IPCC Expert Meeting on the Science Related to UNFCCC Article 2, including Key Impacts, Buenos Aires, May 2004.
- “Connections between Adaptation and Mitigation,” Workshop on Argentina’s Second Communication to the UNFCCC, Buenos Aires, April 2004.
- “Global Change in Local Places: How Scale Matters,” Plenary Presentation, Workshop on Bridging Scales and Epistemologies, Millennium Ecosystem Assessment, Alexandria, Egypt, March 2004.
- “Pursuing Sustainability in Practice as Well as Theory,” invited Anderson Lecture, Association of American Geographers, Philadelphia, March 2004.
- “Integrating Mitigation and Adaptation as Responses to Global Climate Change,” Adaptation Research Workshop, New Delhi, November 2003.
- "Pursuing Urban Sustainability in Practice As Well As in Theory," NCAR/START Institute on Urbanization, Emissions, and the Global Carbon Cycle, Boulder, CO, August 2003.
- “Issues in Developing a Capacity for Integrated Analysis of Mitigation and Adaptation,” Energy Modeling Forum, Snowmass, CO, July 2003.
- “Integrating Mitigation and Adaptation in Responding to Climate Change,” Workshop on

Mitigation and Adaptation: Toward a Mutual Agenda, Kulturwissenschaftliches Institut, Essen, Germany, May 2003.

“Climate Change Impact Vulnerabilities and Adaptation Potentials in a Developing Country City,” American Association for the Advancement of Science, Denver, February 2003.

“Assessing Vulnerabilities to Climate Change Impacts in a Developing Country City,” Energy Modeling Forum, Snowmass, CO, August 2002.

“Human Vulnerability and Adapting to Climate Change,” NAS Natural Disasters Roundtable, Washington, June 2002.

“Some Way Stations on the Road to Sustainability,” Yale University, April 2002.

“Assessing Vulnerabilities to Climate Change in a Developing Country City,” Association of American Geographers, Los Angeles, March 2002.

“Integrated Modeling of Mitigation and Adaptation Pathways,” American Association for the Advancement of Science, Boston, February 2002.

“Sustainability and Scale: Putting Global Climate Change in Context,” Ralph Hall Brown lecture, University of Minnesota, April 2001.

“How Scale Matters: Findings and Speculations,” Association of American Geographers, New York, March 2001.

“Vulnerabilities of Cities to Impacts of Climate Change,” Conference on Climate Change and Cities, USAID et al., Hyderabad, India, December 2000.

“Policy Implications: What We Know and What We Need to Know,” NAS/NRC Workshop on New Tools for Environmental Protection: Education, Information, and Voluntary Measures, Washington, November 2000.

“Environmental and Climate Change Policies: Implications for Asian Energy Security,” Annual Meeting on US-Japan Energy Cooperation, November 2000.

“Lessons Learned about Scale Issues in Assessing Global Change,” Workshop on Sub-global Components of the Millennium Ecosystem Assessment, Washington, DC, November 2000.

“Global Warming and World Peace,” Symposium 2000: World Peace Through Reverence for Life, Vanderbilt University, October 2000.

“Assessing Impact Vulnerabilities and Adaptation Potentials for Urban Areas,” Climate Change and Integrated Assessment Workshop VI, Energy Modeling Forum, Snowmass, July 2000.

“Comparing Costs and Benefits of Global Climate Change Impact Avoidance and Impact Adaptation Pathways,” Climate Change and Integrated Assessment Workshop VI, Energy Modeling Forum, Snowmass, July 2000.

- “Responding to Global Climate Change in the Context of the Sustainability Transition,” DOE/ORAU Global Change Education Program, August 2000.
- “Scaling Issues in Integrated Assessments of Climate Change,” in Workshop on Scaling Issues in Integrated Assessment, organized by the European Forum on Integrated Environmental Assessment and the International Center for Integrated Studies, Mechelerhof, the Netherlands, July 2000.
- “Putting Sustainable Development in Perspective: The Central Research Challenges,” EPA Workshop on Sustainability Research, Cincinnati, June 2000.
- “How Scale Matters,” with R. Kates, Association of American Geographers, Pittsburgh, April 2000.
- “Reflections of the First U.S. National Assessment of Potential Impacts of Climate Variability and Change,” Association of American Geographers, Pittsburgh, April 2000.
- “Scale and Sustainability,” Rutgers University, March 2000.
- “Geography, Global Climate Change, and Sustainable Development,” University of South Carolina, October 1999.
- “Issues for Central America in Responding to Global Climate Change Concerns,” CCAD, Guatemala City, July 1999.
- “The Central Challenges in Achieving Sustainability,” Association of American Geographers, Honolulu, March 1999.
- “Approaching Human Dimensions of Global Change from the Bottom Up,” Human Dimensions of Global Change Lecture Series, Pennsylvania State University, April 1998.
- “Bridging between the Worlds of Learning and Practice,” in Presidential Plenary Session on Academic Geographers Meet the Real World, Association of American Geographers, Boston, March 1998.
- “Scale in the Integrated Assessment of Global Processes,” Aspen Global Change Institute Summer Science Session, Aspen, July 1997.
- “Global Changes in Local Places,” American Association for the Advancement of Science, Seattle, February 1997.
- “Implications of Global Energy Developments,” Tennessee Energy Forum II, Nashville, October 1996.
- “Reconciling Biosphere Preservation with Sustainable Development: The Maya Biosphere Project in Guatemala,” Association of American Geographers, Charlotte, March 1996.

- "Challenges in Increasing the International Contributions of Environmental Professionals," National Association of Environmental Professionals, New Orleans, June 1994.
- "'Sustainable Development' in Geographic Context," presidential address, Association of American Geographers, San Francisco, March 1994.
- "Sustainable Development and International Economic Competition," WATtec National Energy Conference, Knoxville, February 1994.
- "Institution-building for Energy Policy Analysis in Africa," special symposium on energy in Africa, American Association for the Advancement of Science, San Francisco, February 1994.
- "New Opportunities for Geography: Roles for Geographers in Public Service," keynote speaker, Middle Atlantic Division, Association of American Geographers, May 1993.
- "New Horizons for Geography: The Transition from Scarcity to Abundance," keynote speaker, Southeast Division, Association of American Geographers, Louisville, November 1992.
- "Applied Geography: Coming of Age in the Nineties," keynote speaker, Applied Geography Conference, Denton, Texas, October 1992.
- "Improving the Prospects of International Markets for Energy Conservation Technologies and Practices," Third Annual Energy Conservation Forum, Washington, D.C., September 1992.
- "Understanding Global Change and Sustainable Development," National Council for Geographic Education, Santo Domingo, September 1992.
- "Human Dimensions of Energy Efficiency Improvement in Developing Countries," International Geographical Congress, Washington, August 1992.
- "Energy and the Environment," Environmental Management Event, Darden Graduate School of Business Administration, University of Virginia, with the National Geographic Society and the Conservation Fund, Washington, June 1992.
- "Integrated Energy Systems for Developing Countries," Ecoworld '92, Washington, June 1992.
- "Critical Issues in Energy and Environmental Technology Transfer," Study Group on Energy and Environment, Council on Foreign Relations, New York, May 1992.
- "Looking Ahead to a Changing Context for Geographic Discovery," presidential plenary session, Association of American Geographers, San Diego, April 1992.
- "Meeting the Energy and Environmental Needs of Developing Countries," ORNL Showcase Series, Oak Ridge, TN, June 1991.
- "The Case for Energy Efficiency Improvement as a Global Strategy," Conference on Technologies or a Greenhouse-Constrained Society, Oak Ridge, TN, June 1991.

- "GIS Applications in Global Environmental Monitoring: A User's Perspective," Winter Seminar Series, Center for Mapping, Ohio State University, Columbus, March 1991.
- "Institutional Issues in Energy R&D Strategies for Developing Countries," Workshop on Energy Research and Developing Countries, Oak Ridge, November 1990.
- "Roles of GIS and Remote Sensing in Global Environmental Monitoring," with R. B. Honea, Applied Geography Conference, Charlotte, October 1990.
- "Affecting National Policy Through Geographic Research," West Lakes Division, Association of American Geographers, DeKalb, IL, October 1990.
- "Energy Technology Transfer: Roles of R&D Institutions," Conference for USAID/Government of India Program to Accelerate Commercial Energy Research (PACER), New Delhi, April 1990.
- "Responses by Developing Countries to Global Warming," Association of American Geographers, Toronto, April 1990.
- "Energy Strategies for Developing Countries: Ethics and the U.S. National Interest," GTE Lecture Series on Energy, Economics, and the Environment: An Assessment of Current and Emerging Ethical Conflicts, University of Oklahoma, Norman, April 1990.
- "The Outlook for Energy Supply and Demand in Developing Countries," Expert Group on Energy and Electricity Supply and Demand for the Senior Expert Symposium on Electricity and the Environment, Vienna, April 1990.
- "Policy Responses to Uncertain or Changing Physical System Extremes," Symposium on Human Responses to Physical Extremes, American Association for the Advancement of Science, New Orleans, February 1990.
- "Global Warming and Prospects for U.S. Coal," University of Wyoming, November 1989.
- "Energy Futures and Global Climate Change," University of Northern Colorado, November 1989.
- "Potentials to Transfer the U.S. NEPA Experience to Developing Countries," with D. Hunsaker, C. Petrich, and S. Wright, Symposium on The Scientific Challenges of NEPA, Knoxville, October 1989.
- "Assessing the Impacts of Proposed National Policy Initiatives," Symposium on The Scientific Challenges of NEPA, Knoxville, October 1989.
- "Lessons Learned from the National Energy Planning Experience," Seminar on Energy Analysis and Planning, USAID/INCAE, Antigua, Guatemala, April 1988.
- "Developing Country Responses to the Greenhouse Problem: R&D Needs and Opportunities,"

WRI/EPA Workshop on Developing Country Energy Strategies: Implications for the Greenhouse Problem, Washington, April 1988.

"Five Energy Crises in Developing Countries in an Era of Low Oil Prices," Global Development Conference, Washington, April 1988.

"Impacts of Energy Development and Use," in Centennial Symposium on Geographic Perspectives on a Century of Change, National Geographic Society, Washington, January 1988.

"New Energy Technologies and Their Significance for Economic Development in the Third World," National Research Council/Agency for International Development Symposium Series on Science and Development, Washington, October 1987.

"Lessons Learned from the National Energy Planning Experience," UNDP-World Bank Seminar on Energy Planning, Vienna, June 1987.

"Energy and Development," University of North Carolina, April 1987.

"Energy and Development," University of Minnesota, March 1987.

"Issues in Transferring U.S. Energy Technologies to Developing Nations," with M. A. Brown and G. Samuels, American Society of Mechanical Engineers, Anaheim, December 1986.

"National Energy Planning for Developing Countries," Association of American Geographers, Minneapolis, April 1986.

"Predicting Energy and Technological Crises in the Sunbelt," invitational conference on The Sunbelt: A Region and Regionalism in the Making?, Miami, November 1985.

"Approaches to Energy Planning," conference on Energy Policy for the Americas, San Juan, Puerto Rico, October 1985.

"Risk Perceptions in Developing Countries," with S. F. Rayner, WATTEC National Energy Conference and Exposition, Knoxville, February 1985.

"Institution Building for Energy Planning," international conference on energy planning, UNESCO/COPPE, Rio de Janeiro, September 1984.

"Reducing the Oil Import Dependence of a Less-Developed Country," biennial conference of the Working Group on Energy Resources and Development, International Geographical Union, Amsterdam, August 1984.

"Federal Laboratories: A Framework for Policy Analysis," with H. Lambright and A. Teich, Symposium on the Role of Federal Laboratories, American Association for the Advancement of Science, New York, May 1984.

"Geography and Public Policy: the National Level," keynote speaker, annual meeting of the

- Association of American Geographers, Washington, D.C., April 1984.
- "Reflections on Social Organization in National Laboratories," Southern Sociological Society, Knoxville, April 1984.
- "When Will the Next Oil Crisis Occur?," Central Michigan University, March 1984.
- "Energy Policy Analysis in Theory and Practice," University of Tennessee, February 1984.
- "Alternative Responses to Oil Import Dependence," Second Interuniversity Symposium on Energy, Santiago, Chile, November 1983.
- "Energy Policy Analysis in Theory and Practice," York University, October 1983.
- "Prospects for Local Energy Action," Symposium on Social and Behavioral Aspects of Energy Consumption and Production, American Association for the Advancement of Science, Detroit, May 1983.
- "The Future Role of Government Laboratories," with H. Lambright and A. Teich, in Seminar Series on The Changing Structure of the U.S. Research System, George Washington University, May 1983.
- "Institutional Choices and Linkages in the New R&D Partnership," Symposium on National Science and Technology Policy, American Society for Public Administration, New York, April 1983.
- "Social, Economic, and Institutional Issues," in Symposium on Energy for the Future: Facing the Radiation Protection Issues, WATTEc National Energy Conference and Exposition, Knoxville, February 1983.
- "Scale and Energy Technology Choice," Seminar Series on Technology Choice, Boston University, February 1983.
- "Policy Analysis in Theory and Practice," in International Workshop on Regional Consequences of Large-Scale Energy Projects, IIASA, Laxenburg, Austria, February 1983.
- "Economic Geography, Relevance, and Social Change," Southeast Division, Association of American Geographers, Memphis, November 1982.
- "Geography and Our Energy Heritage," Conference on Energy in American History, Virginia Tech Center for the Study of Science in Society, October 1982.
- "Potential Contributions by Sociologists to Energy Research," Workshop on Employment of Sociologists in Government Settings, American Sociological Association, San Francisco, September 1982.
- "People and Energy Policy," Third International Forum on the Human Side of Energy, Knoxville, August 1982.

- "Potential Contributions by the Behavioral Sciences to Environmental Policymaking," Fifth Annual Symposium on Applied Behavioral Science, Blacksburg, Virginia, May 1982.
- "Linkages and Energy Emergency Planning," Association of American Geographers, San Antonio, April 1982.
- "Some Issues in an Energy R&D Strategy for the Long Term," in Symposium on Energy R&D Strategies and National Energy Policy, American Association for the Advancement of Science, Washington, January 1982.
- "Career Public Servants: What Scientists Worry About," in Symposium on Science and the Career Public Service, American Association for the Advancement of Science, Washington, January 1982.
- "Energy Conditions and Regional Development Prospects in the Southeast," AAAS regional energy seminar, Atlanta, October 1981.
- "Potential Contributions by Behavior Analysts to Meeting U.S. Energy Needs," Special Symposium on Behavior Analysis and Public Policy, Association for Behavior Analysis, Milwaukee, May 1981.
- "National Energy Policy Directions and the Role of National Laboratories," Workshop on Energy R&D Priorities, Oklahoma State University, Oklahoma City, April 1981.
- "Decentralized Energy Planning and the Potential of Alternative Energy Systems," Centennial Conference on Environment, Energy, and Economics, Tuskegee Institute, April 1981.
- "Space, Time, and Energy Policy," Kent State University, March 1981.
- "Space, Time, and Energy Policy," University of Florida, March 1981.
- "Solving Our National Energy Problem by Local Planning," Keynote Address, Tennessee Chapter, American Planning Association, Gatlinburg, January 1981.
- "Research Needs in Energy," University of Maryland, November 1980.
- "Energy Issues and Development Prospects for the Coastal States," Symposium on Assessing Potential Energy-Related Impacts in Coastal States, Charleston, October 1980.
- "Geographic Education and Solving our National Energy Problem," keynote address, Energy Mini-Program, National Council for Geographic Education, Des Moines, October 1980.
- "Energy Self-Sufficiency vs. Interdependency: Implications for Regional Income Distribution," Seminar on Regional Development Alternatives, United Nations Centre for Regional Development and IGU Commission on Regional Systems and Policies, Nagoya, Japan, August 1980.

- "Energy Self-Sufficiency as an Issue in Regional and National Development," University of Tennessee, May 1980.
- "Decentralized Energy Planning and Consensus in Energy Policy," National Energy Policy Conference, Morgantown, West Virginia, May 1980.
- "Geographical Scale and Consensus-Building in Energy Policy," Syracuse University, April 1980.
- "Problems of Consensus Formation in Energy Policy," Southern Sociological Society, March 1980.
- "Solving Our Most Basic Energy Problem: Irresolution," Northern Illinois University Graduate Colloquium, March 1980.
- "Energy and Economic Development Planning," with J. Bagueant, A. Loebel, and Carl Thomas, Costa Rican Workshop on Energy and Development, San Jose, Costa Rica, March 1980.
- "Energy Self-Sufficiency vs. Dependency in Regional Development," Seminar Series on Energy and Regional Growth, Boston University, February 1980.
- "Decentralization, Consensus, and Energy Decisions," Society for General Systems Research, San Francisco, January 1980.
- "Is Comprehensive Analysis of Critical Interactions Possible?," in Symposium on Energy, Economics, and the Environment, American Association for the Advancement of Science, San Francisco, January 1980.
- "Geographic Scale and Consensus-Building in Energy Policy," principal address, Middle States Division, Association of American Geographers, October 1979.
- "Spatial Structure and Energy Conservation," Applied Geography Conference, SUNY Binghamton, September 1979.
- "Energy R&D by Social Scientists," Oak Ridge National Laboratory Summer Seminar Series, August 1979.
- "National Energy Plan II: Environmental Impact Assessment of Possible Legislative Initiatives," Technical Highlight, Energy Division Annual Information Meeting, Oak Ridge National Laboratory, April 1979.
- "Effective Social Science Research for Energy Policy," American Association for the Advancement of Science, Houston, January 1979.
- "Communications between Hard and Soft Sciences: Challenges and Avenues," Annual Practical Conference on Communications, Society for Technical Communication, Gatlinburg, Tennessee, October 1978.

- "Interest Groups, Consensus-Building, and Energy Decisionmaking," in Topical Meeting of the American Nuclear Society on Environmental Aspects of Non-Conventional Energy Resources, Denver, September 1978.
- "Issues in Federal Energy R&D Policy," University of Tennessee, May 1978.
- "Key Issues in Making Energy Decisions," University of Cincinnati, May 1978.
- "Geography and Energy Policy," Applied Geography Conference, SUNY-Binghamton, May 1978.
- "Environmental Management with Decentralized Government," Southwest Social Science Association, April 1978.
- "Relationships between Energy Policy and Materials Resource Policy," Technology and Public Policy Program and College of Engineering, Vanderbilt University, March 1978.
- "Forecasting the Location of New Energy Facilities," with Frank J. Calzonetti, in special invitational session on Energy Facility Siting, Association of American Geographers, Salt Lake City, April 1977.
- "Priorities for Energy Supply RD&D," Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 1977.
- "A Spatial Allocation Model for New Energy Supply Facilities in the West," Western Social Science Association, Tempe, April 1976.
- "A Departmental Approach to Professional Growth for Faculty," with Michael Libbee, in special invitational workshop on Change in Higher Education: Models for Professional Growth, Association of American Geographers, April 1976.
- "Locating Noxious Energy Supply Facilities," with Frank Calzonetti, in special invitational session on Locational Conflicts and Public Facilities, Association of American Geographers, New York City, April 1976.
- "The Spatial Allocation of New Energy Supply Activities," Association of American Geographers, New York City, April 1976.
- "Locating New Energy Supply Facilities," Oak Ridge National Laboratory, Oak Ridge, Tennessee, April 1976.
- "The Impact of Energy Supply on Rural Settlement," International Symposium on Rural Settlements, Varanasi, India, December 1975.
- "A Spatial Allocation Model for Energy Supply Facilities," with Frank Calzonetti, in the Energy Research and Policy Workshop, Regional Science Association, Cambridge, Massachusetts, November 1975.

- "Can a Sense of Place be Investigated Scientifically?," Southwest Division, Association of American Geographers, Norman, September 1975.
- "The Regional Impact of a Guaranteed Annual Income," with Hsiung Huang, Association of American Geographers, Milwaukee, April 1975.
- "The Regional Impact of Energy Supply Alternatives," Southwest Division Association of American Geographers, San Antonio, March 1975.
- "Distance, Diversity, and Stability," Society for General Systems Research, New York City, January 1975.
- "The Evolution of Spatial Patterns and Trends in Regional Income Inequality," Regional Conference of the International Geographical Union, Commission on Quantitative Methods, Palmerston North, New Zealand, December 1974.
- "Prospects for a General Theory of Periodic Space-Time Phenomena," in special session on "Theory Synthesis for Periodic Space-Time Phenomena," Association of American Geographers, Seattle, April-May 1974.
- "Income Surfaces and Trends in Regional Inequality," Rocky Mountain Social Science Association, El Paso, April 1974.
- "Environmental Management with Decentralized Government in Yugoslavia," Oklahoma Academy of Sciences, Oklahoma City, November 1973.
- "Regional Equality and the Evolution of Income Surfaces," Oklahoma Academy of Sciences, Oklahoma City, November 1973.
- "Regional Income Equality as a Development Goal," Interdisciplinary Program in Urban Planning, Faculty of Architecture, University of Ljubljana, Yugoslavia, June 1973.
- "Sense of Place' as a Focus for Social Science Research," Symposium on A Sense of Place, Syracuse University, October 1972.
- "Location Policy and the Evolution of Industrial Patterns: A Model-Based Approach to Estimating Some Costs of Decentralization," with Lalita Sen and Robert G. Jensen, Fifth Author's Conference, International Geographical Union Commission on Quantitative Methods, Budapest, August 1971.
- "Systems Analysis and Its Relevance for Geography," Lecture Series in Geographic Theory, York University (Ontario), January 1971.
- "World Culture Regions and Patterns of Change," with Preston E. James, Association of American Geographers, San Francisco, August 1970.
- "Accessibility and Technological Change in Agriculture: A Case Study in Northern India," Association of Asian Studies, San Francisco, April 1970.

"Accessibility and Economic Development," University of Bristol (England) Department of Geography Lecture Series in Urban and Regional Geography, December 1968.

"Accessibility and the Rate of Technological Change in Agriculture," Delhi School of Economics, New Delhi, India, April 1968.

AWARDS AND HONORS

Shared in the 2007 Nobel Peace Prize as a Coordinating Lead Author in Working Group II of the Intergovernmental Panel on Climate Change (IPCC), with all IPCC lead authors formally considered "co-laureates."

Association of American Geographers President's Award, 2009.

Ida Beam Distinguished Visiting Professor, University of Iowa, October-November 2005.

National Associate, National Academies of Science, Engineering, and Medicine, 2003 - .

President, Association of American Geographers, 1992-93.

James R. Anderson Medal of Honor in Applied Geography, Association of American Geographers, 1995.

Distinguished Geography Educator's Award, National Geographic Society, 1993.

Honors, Association of American Geographers, 1986.

Fellow, American Association for the Advancement of Science, 1985.

President's Award for contributions to organizational performance improvement, Martin Marietta Energy Systems, 1993.

Special Recognition Award, Applied Geography Conference, 1989.

Corporate Research Fellow, Martin Marietta Energy Systems/Oak Ridge National Laboratory, 1986.

Special Recognition Award, Martin Marietta Energy Systems, 1985.

MISCELLANEOUS PROFESSIONAL EXPERIENCE

Grants and Contracts

Project Director, Integrated Science and Computing Support for the National Climate Service, NOAA, 2009 - .

Project Director, Possible Impacts of Relatively Severe Climate Change, ORNL Laboratory Directors R&D Program, 2008-2009.

Project Director, Lessons from Experience about Societal Responses to Emerging Technologies Perceived as Involving Risks, DOE Program on Ethical, Legal, and Societal Implications (ELSI) of Research on Alternative Bioenergy Technologies, Synthetic Genomics, or Nanotechnologies, 2007 - .

Project Director, Integrated Assessment Modeling Technical Support, DOE Office of Science, 2007 - .

Research Director, Community and Regional Resilience Initiative, DHS, 2007 - .

Project Director, Effects of Global Change on Human Settlements, EPA on behalf of the Climate Change Science Program, 2006-2007.

Project Director, Assessment of Effects of Global Change on Energy Production and Use, DOE/OS on behalf of the Climate Change Science Program, 2005-2007.

Coordinating Team Member, State of Carbon Cycle Research (SOCCR), U.S. Climate Change Science Program Synthesis and Assessment Product (SAP) 2.2, NASA/DOE/NOAA/NSF, 2005-2007.

Project Director, Development of a Road Map for an Energy Efficiency Component of DOE's Tribal Energy Program, DOE/EERE, 2004-2006.

Member, Coordinating Team, Assessment of the State of Carbon Cycle Research (SOCCR: SAP 2.2), 2004-6.

Co-principal Investigator, Development of a GIS-based Decision Support System for Applications of Renewable Energy and Energy Efficiency Technologies in Developing Countries (GREEN), DOE/EERE, 2003.

Project Director, Sustainable Energy Project, U. S. Agency for International Development/Jamaica-Caribbean Energy Programs, 2003-4.

Project Director, Assistance in Developing the Clean Energy Technology Export (CETE) Initiative, Department of Energy, 2001-2002, 2004-2005.

Project Director, Assistance with Energy, Environment, and Technology Planning and Program Implementation, U.S. Agency for International Development, 1995-2003.

Project Director, Improving the Science Base for Evaluating Energy and Environmental Initiatives, ORNL Laboratory Directors R&D Fund, 2000-2002.

Project Director, Potentials of Energy Technologies to Reduce Greenhouse Gas Emissions from Developing Countries and Emerging Economies, ORNL discretionary funds, 1998.

Project Director, Public Participation in the U.S. National Assessment of Vulnerabilities to Climate Variability and Change, National Center for Environmental Decision-making Research/NSF, 1998-99.

Project Director, Scenario Assistance for the U.S. National Assessment of Vulnerabilities to Climate Variability and Change, Department of Energy, 1998-99.

Co-principal Investigator, Global Change in Local Places, NASA Mission to Planet Earth Program, 1996-2000.

Co-principal Investigator, Geographic Dimensions of Terrorism, Association of American Geographers, National Science Foundation, 2001-2002.

Project Director, India-U.S. Cooperation for Sustainable Development, Department of Energy, 1994-95.

Project Director, Technical Assistance in Energy and Infrastructure Planning and Management, U.S. Agency for International Development, 1993-95.

Project Director, Assisting the Deployment of Energy Practices and Technologies, Department of Energy, 1992-94.

Project Director, Strategic Technology Initiative, U.S.-Asia Environmental Partnership, 1992-94.

Project Director, Technical Assistance to Interagency Committee for Energy Efficiency Commerce and Trade (COEECT), 1992-94.

Project Director, Environmental Assistance to Guatemala Mission, U.S. Agency for International Development, 1990-.

Project Director, Technical Assistance for Energy Planning and Policy Development, U.S. Agency for International Development, 1984-92.

Project Director, Renewable Energy Applications, U.S. Agency for International Development, 1985-88, 1991-93.

Project Director, Western Hemisphere Energy Cooperation Study, Department of Energy, 1988-90.

Coordinator, ORNL Projects for the Federal Emergency Management Agency, 1984-88.

Project Investigator and Chair of Steering Group, National Energy Assessment for Liberia, U.S. Agency for International Development, 1982-83.

Principal Investigator, Study of Issues and Options for Multiprogram National Laboratories, Energy Research Advisory Board, 1981-82.

Manager, Energy Contingency Planning Project, Department of Energy, 1981-82.

Manager, Energy Policy Impact Assessment Project, Department of Energy, 1979-81.

Steering Group Member, A National Energy Perspective, Oak Ridge National Laboratory, 1979-80.

Manager, National Energy Plan-II Impact Assessment Project, Department of Energy, 1978-79.

Project Investigator, Decentralized Solar Technology Assessment, Department of Energy, 1978-79.

Project Investigator, Impacts of Increased Coal Utilization, Office of Technology Assessment, 1977-78.

Project Investigator, Energy Systems Analysis of Alternative Resource Options, National Science Foundation, 1974-76.

Project Investigator, A Methodology and Documentation for Consistent Analysis of Energy Alternatives for Environmental Impact Statements, Council on Environmental Quality, 1974.

Co-director, Teaching and Learning in Graduate Geography project, OU, participating in the Association of American Geographers nationwide experimental project, funded by NSF, 1974-76.

Co-director, A Coarse-Sort System for Preliminary Water Resource Management Alternatives, U.S. Office of Water Resources Research, 1974-75.

Director, National Science Foundation Instructional Scientific Equipment Grant, 1974-76.

Research Director, Syracuse-Yugoslav Project on Environmental Policy and Planning, U.S. Department of Health, Education, and Welfare, 1972-73.

Co-director, Field Studies in Social and Economic Geography (India), Department of Geography graduate student research training project funded by the U.S. Office of Education, 1971-72.

Director, Urban Mass Transportation Administration Research and Training Grant, Syracuse University, 1971-72.

Professional Activities as a Consultant

Various consulting services for the Department of Energy, 1978-, the U.S. Agency for International Development, 1984-, NASA, NOAA, and EPA

Member, Stakeholder Services Committee, Southern Climate Impacts Planning Program (SCIPP), 2009 - .

Testimony to the U.S. Senate Committee on Energy and Natural Resources, May 2008.

Member, Author Team for the U.S. Climate Change Science Program's "Unified Synthesis Product," 2008.

Invited participant, Department of Energy Workshop on "Identifying Outstanding Grand Challenges in Climate Change Research: Guiding DOE's Strategic Planning," Crystal City, VA, March 2008.

Co-leader, Mid-term Programmatic Evaluation of USAID/Southern Africa's Program to "Improve Management of Shared River Basins," February – April 2007.

Co-organizer and co-leader of workshop on the knowledge base for assessing climate change impact vulnerabilities at a regional scale, Oak Ridge Center for Advanced Studies, October 2005.

Invited participant, Workshop on Decision Support and Carbon Cycle Science, University of Colorado, June 2005.

Invited participant and session leader, National Climate Change Impact Assessment Workshop, Washington, April 2004.

Coordinating Lead Author, Chapter 7 (Industry, Settlements, and Society), Fourth Assessment Report of IPCC Working Group II (Impacts, Adaptation, and Vulnerabilities), 2004-2007

Member, Virtual Coordinating Group, Mitigation and Adaptation to Climate Change, IPCC Working Groups II and III, 2004-2007.

Participant in IPCC expert workshops on dangerous levels of climate change impacts, Buenos Aires, May 2004, and on mitigation-adaptation and sustainable development, Reunion Island, February 2005.

Member, Science Steering Group, U.S. Carbon Cycle Research Program, 2002-2006.

Assistance to the Interagency Steering Group, development of a Strategic Plan for a nine-agency U.S. Clean Energy Technology Exports (CETE) program, 2001-2005.

Chair, Program Evaluation Team, Department of Geography, University of South Carolina, April 2003.

Chair, Program Evaluation Team, Department of Geography, University of North Carolina, December 2000.

Contributor, Working Group for Subglobal Assessments; co-author, scaling chapter of

conceptual framework report, and chapter review editor for sub-global assessments, Millennium Ecosystem Assessment, UN Environment Programme et al., 2000-2005.

Member, IPCC Working Group II (Impacts, Adaptation, and Vulnerabilities); lead author of chapter 7 (human settlements, energy, and industry) and of the summary for policymakers, 1999-2001.

Member, Advisory Committee, Human-Environmental Research Observatories, NSF-supported national program led by the Pennsylvania State University, 2000-2003.

Review Panelist, NSF Biocomplexity Program, June 2000.

Participant, Invitational Workshop on Vulnerability to Global Environmental Change, Airlee House, VA, May 2000.

Participant, Workshop on Human Dimensions of Long-Term Ecological Research (LTER) Stations, Phoenix, January 2000.

Organizer and Leader, Symposium on Integrating Human and Natural Systems to Understand Climate Change Impacts on Cities, Aspen Global Change Institute, July 1999.

Co-organizer, 1999 Workshop, U.S. National Assessment of Vulnerabilities to Climate Variability and Change, Atlanta, April 1999.

Coordinator, Inter-regional Forum, U.S. National Assessment of Vulnerabilities to Climate Variability and Change, 1998-99.

Participant, 1998 Summer Workshop, U.S. National Assessment of Vulnerabilities to Climate Variability and Change, Monterey, July 1998.

Member, Program/Policy Committee, National Center for Environmental Decision-making Research, 1998.

Participant, Meeting to Plan a U.S. National Assessment of the Consequences of Climate Change, U.S. Global Change Research Program and the Office of Science and Technology Policy of the White House, Aspen, July-August 1997.

Participant, Summer Science Session on "Scaling from Site-Specific Observations to Global Model Grids," Aspen Global Change Institute, Aspen, July 1997.

Participant, Summer Study on the Sustainability Transition, NAS/NAE/NRC Board on Sustainable Development, Woods Hole, July 1997.

Member, U.S. Delegation (six members), Return Visit by DOE Secretary O'Leary to India, February 1995.

Member, U.S. Delegation, Presidential Mission on Sustainable Energy and Trade to India, July 1994.

- Member, External Evaluation Team, Department of Geography, University of Wyoming, April 1994.
- Member, External Evaluation Team, School of Geography, Clark University, May 1993.
- Board of Advisors, Department of Geography, University of Tennessee, 1993-.
- Member, Board of Trustees, APENPLAN, Asian and Pacific Development Centre, 1993-95.
- Member, Study Group on Energy and Environment: International Policy Implications, Council on Foreign Relations, 1992.
- Member, Working Group on Energy Technology Transfer for Sustainable Economic Development, Atlantic Council, 1992-93.
- Participant, U.S.-Japan Conference on Cooperative Leadership for Environmental Protection and Economic Development, Washington, D.C., May 1991.
- Member, Executive Committee, U.S. Working Group for the Global Energy Efficiency Initiative, 1990-.
- Member, Committee on Energy Efficiency, United States Energy Association, 1990-.
- Participant, Workshop on Developing Country Perspectives on National and International Policy Implications of Global Warming, Human Dimensions of Global Change Program, Montebello, Quebec, July-August 1990.
- Member, Joint Steering Committee for association between the Oak Ridge National Laboratory and the Universidad Nacional Autonoma de Mexico, 1990-.
- Member, Expert Group on Energy and Electricity Supply and Demand for the 1991 Senior Expert Symposium on Electricity and the Environment (Helsinki), 1990-91.
- Participant, Workshop on the U.S., Developing Countries, and Global Warming, Office of Technology Assessment, U.S. Congress, September 1989.
- External evaluator, Geography and Earth Science Department, University of North Carolina-Charlotte, May 1989.
- Leader, Evaluation of Energy Policy Planning Project, U.S. Agency for International Development/Government of Egypt, March-April 1989.
- Participant, LDC Energy Workshop, World Resources Institute, Washington, April 1988.
- Participant, Seminar on Energy Demand Analysis, Instituto Centroamericano de Administracion de Empresas (INCAE), Antigua, Guatemala, April 1988.

- Participant, Global Development Conference, World Academy of Development and Cooperation, Washington, April 1988.
- Member, Advisory Panel, Energy Conservation Services Program (ECSP), Office of Energy, U.S. Agency for International Development, 1988-92.
- Member, Task Force on Engineering for Developing Countries, American Society of Mechanical Engineers, 1987-.
- External evaluator, Energy, Environment, and Resources Center, University of Tennessee, July 1986.
- Member, International Consultative Group, Energy Research Program, Universidad de Chile, 1986-.
- Participant, workshop on energy issues in Asia, U.S. Agency for International Development, Los Banos, the Philippines, April 1985.
- Participant, international seminar on "Energy Planning for Development," UNESCO/COPPE, Rio de Janeiro, September 1984.
- Lecturer, short course on Energy Demand and Production Modeling, University of Santiago, Chile, November 1983.
- Presented testimony to the Subcommittee on Energy Development and Applications of the U.S. House Committee on Science and Technology, March 10, 1983.
- Member, Board of Visitors, Graduate School of Planning, University of Tennessee, 1983-91.
- Member of Advisory Board, project on "The Regional Consequences of Large Scale Energy Development," International Institute for Applied Systems Analysis (IIASA), 1982-83.
- Member of Advisory Committee, ESPER Network (Energy/Environment Social Perspectives), 1986-86.
- Member of Panel, Review of "Five-Year Outlook on Science and Technology," conducted by the Technology and Science Policy Program, Georgia Institute of Technology, for the National Science Foundation, 1982.
- Presented testimony to the Subcommittee on Energy Development and Applications of the U.S. House Committee on Science and Technology, December 10, 1981.
- Presented testimony to the Committee on Energy of the Tennessee Senate, December 1, 1981.
- Consultant to Cleveland State University on program development in urban studies and policy planning, September 1981.
- Member of Advisory Committee, Social Science-Energy Clearinghouse, Yale University, 1981.

Participant, Workshop on the Scientific Quality of Environmental Impact Statements, The Institute of Ecology, March 1981.

Participant, ERAB Summer Study, La Jolla, August 1980.

Member, Energy Research Subpanel of the Research and Development Panel, Energy Research Advisory Board (ERAB), Department of Energy, 1980-81.

Chair, *ad hoc* Committee to Draft a Proposal for a Social and Economic Science Research Program, Office of Energy Research, Department of Energy, Summer 1980.

Participant, Workshop on the Methodology for Economic Impact Analysis of Climatic Change, Resources for the Future, April 1980.

Participant in International Workshop on Energy Assessment Methodologies, National Academy of Sciences, January 1980.

External evaluator of graduate programs in geography, State University of New York at Binghamton, December 1979.

Participant, Workshop on Acceptable Levels of CO₂, Oak Ridge, November 1979.

Presented testimony to the U.S. House Committee on Science and Technology, September 10, 1979.

Organizer and chair of seminar on "Energy Policy for America," Southern Newspaper Publishers Association, Atlanta, November 1978.

Member of Steering Committee for National "Workshop on the Transition to a Hydrogen Economy," organized by the National Bureau of Standards for the U.S. House Committee on Science and Technology, January-June 1978.

Consultant to Office of Environmental Policy Analysis, Department of Energy, on energy facility siting and policy impacts of environmental legislation, Fall 1977.

Consultant to Office of Technology Assessment, U.S. Congress, for review of the proposed national energy program, May-June 1977.

Member of the Data and Analysis Panel, Inexhaustible Energy Resources Planning Study, ERDA, April-August 1977.

Participant in workshop on Energy Supply and Demand: 1975-1990, Congressional Research Service, February 1977.

External evaluator of the Department of Geography, Southwest Texas State University, February 1977.

Presented testimony to the Subcommittee on Energy Research, Development, and Demonstration (Fossil Fuels) of the U.S. House Committee on Science and Technology, January 26, 1976.

Presented, with Professors George Reid and Larry Canter, one-week course on Environmental Impact Assessment, Pan American Health Organization, Mexico City, December 1975.

Member of Technical Advisory Committee for Oklahoma State Survey, Center for Economic and Management Research, University of Oklahoma, 1975-76.

Responsible for coverage of economic, social, historical, and aesthetic impacts, "Short Course on Environmental Impact Assessment," Oklahoma Center for continuing Education, given at irregular intervals (usually two or three times a year), 1974-77.

Consultant (with Science and Public Policy Program) to Office of Technology Assessment, U.S. Congress, for evaluation of the proposed budget for the Energy Research and Development Agency, January-February and July-August, 1975.

Consultant to the Office of the Governor, State of Oklahoma, on cost-of-living estimates and inflation-related policy, March-April 1974.

Consultant to Special Projects Counsel to the Interstate Commerce Commission, February 1974.

Consultant on assessment of economic and demographic effects of alternative navigation routes, Mid-Arkansas River Basic Project, Corps of Engineers, Fall 1973.

Consultant on the identification of hospital service regions, ALPHA, April 1974.

Member of the Technical Advisory Consortium, ALPHA (regional health-care research organization), Syracuse, 1972-73.

Case study consultant, International Conference on International Environmental Education, Bled, Yugoslavia, March 1973.

Consultant (with Policy Institute, Syracuse University Research Corporation) on environmental impact estimation, Urban Development Corporation, New York State (for the Lysander new town project), Fall 1972.

Principal advisor, earth resources research, Syracuse/NASA Program, 1970-72.

Consultant on economic base and land-use projections (with John H. Thompson and Sidney Sufirin) for Syracuse-Onondaga County Planning Agency, 1971.

Consultant on geography and public administration (impacts of Nuplex siting) for Atomic Energy Commission, with Policy Institute, Syracuse University Research Corporation, Summer and Fall, 1969.

Professional Service

President, Association of American Geographers, 1992-93.

Vice President, Association of American Geographers, 1991-92.

Past President, Association of American Geographers, 1993-94.

Member, Committee on America's Climate Choices (ACC), National Academies/National Research Council, 2008-2010.

Vice-chair, Panel on Adapting to Impacts of Climate Change, ACC, National Academies/National Research Council, 2008-2009.

Member, Board on Earth Sciences and Resources, National Academy of Sciences/National Research Council, 2002-2007.

Chair, Committee on Human Dimensions of Global Change, National Academy of Sciences/National Research Council, 2004-2010.

Chair, Committee on Extending Observations and Research Results to Practical Applications: A Review of NASA's Approach, National Academy of Sciences/National Research Council, 2006-2007.

Member, Panel on Earth Science Applications and Societal Needs, "decadal survey" of Earth Science and Applications from Space: A Community Assessment and Strategy for the Future, National Academy of Science/National Research Council, 2005-2006.

Member, Committee on Human Dimensions of Global Change, National Academy of Sciences/National Research Council, 1998-2004.

Member, Panel on Public Participation in Environmental Assessment and Decision Making, National Academy of Sciences/National Research Council, 2003-2007.

Member, Steering Group, NAS initiative on sustainable cities, 2005-2006.

Invited Participant, meetings of the Coordinating Committee for Global Change, National Academy of Science/National Research Council, 2003 and 2004.

Invited Participant, meeting of the Roundtable on Science and Technology for Development, National Academy of Science/National Research Council, 2003.

Chairman, Committee on "Rediscovering Geography: New Relevance for the New Century," National Academy of Sciences/National Research Council, 1993-97.

Chairman, U.S. National Committee for the International Human Dimensions Program, Open Meeting, Bonn, 2005.

Chairman, U.S. National Committee for the International Geographical Union, National Academy of Sciences/National Research Council, 1993-97.

Head of U.S. Delegation, International Geographical Congress, the Hague, 1996, National Academy of Sciences/National Research Council.

Vice Chairman, U.S. National Committee for the International Geographical Union, National Academy of Sciences/National Research Council, 1989-93.

Deputy Head of U.S. Delegation, International Geographical Congress, Washington, D.C., 1992, National Academy of Sciences/National Research Council.

Treasurer and member of the Board of Directors, 27th International Geographical Congress (1992), 1986-92.

Councilor, American Geographical Society, 1985-93.

Member, Advisory Group on Preservice Education, National Geographic Society Education Foundation, 1993.

Chair, Content Advisory Committee, National Geography Education Standards Project, 1992-94.

Member, Geography Consensus Planning Committee, NAEP Geography Assessment, 1991-92.

Member, Geography Task Force, National Council on Education Standards and Testing, 1991.

Consulting Editor, *Environment*, 1993-.

Member, Editorial Board, *Social Science Quarterly*, 1994-.

Member, Editorial Board, *Forum for Applied Research and Public Policy*, 1990-2002.

Member, Editorial Board, *Asian Journal of Environmental Management*, 1992-.

Member, Editorial Board, *The Annals of Regional Science*, 1992-96.

Member, Editorial Board, *Annals of the Association of American Geographers*, 1987-93, 2000-03.

Co-chair, Committee on Global Change in Local Places, Association of American Geographers, 1994-96.

Member, Mapping Science Advisory Committee, National Academy of Sciences/National Research Council, 1987-90.

Member, Search Committee for Executive Director, Association of American Geographers, 1989 and 2002.

Member, Working Group on Energy, International Geographical Union, 1980-88; Executive Secretary, 1986-88.

Treasurer, Association of American Geographers, 1977-80.

Member of Council and Executive Committee of Council, Association of American Geographers, 1977-80.

Association representative to Section K (Social, Economic, and Political Sciences) of the American Association for the Advancement of Science, Association of American Geographers, 1981-87, 1992-93.

Member, Committee on Behavioral and Social Aspects of Energy Consumption and Production, National Academy of Sciences/National Research Council, 1980-86.

Member of Advisory Committee, Resource Publication Series, Association of American Geographers, 1980-85.

Chair, Honors Committee, Association of American Geographers, 1999.

Chair, Honors Committee, Association of American Geographers, 1987.

Chair, Task Force on Geographic Advice on National Issues, Association of American Geographers, 1985-86.

Chair, Finance Committee, Association of American Geographers, 1979-80. Member, Finance Committee, Association of American Geographers, 1979-83.

Ex-Officio member of the Finance Committee, Association of American Geographers, 1977-79.

Member, Committee on Committees, Association of American Geographers, 1979-80.

Member of Long-Range Planning Committee for Applied Geography, 1978-84.

Member of Finance Task Force, Long-Range Planning Coordination Committee, Association of American Geographers, 1977-78.

Member of the Program Committee, Association of American Geographers, 1977.

Member of the Local Arrangements Committee, Association of American Geographers, 1984.

Member of the Committee on Urban and Regional Planning and Development, Association of American Geographers, 1973-76.

Member of special task force on the public image of geography, Association of American Geographers, 1973-74.

Member of Honors Committee, Southeast Division, Association of American Geographers, 1984.

Member, selection committee for Fulbright Fellows in Geography, Council for the International Exchange of Scholars, 1980-83.

Corresponding member, Commission on Regional Systems and Policies, International Geographical Union, 1980-88.

Member, Association Business Committee, International Association for Impact Assessment, 1980-81.

Chair, Publications Committee, International Association for Impact Assessment, 1986-87.

Advisory Editor, Syracuse Geographical Series, 1980- .

Member, Advisory Committee, *ESPER Journal* (Energy/Environmental Social Perspectives), 1982-88.

Assistant Editor, *Proceedings*, Oklahoma Academy of Science, 1974-75.

Judge of social and behavioral science projects, International Science and Engineering Fair, Oklahoma City, May 1975.

Occasional editorial consultant for Houghton-Mifflin, Wiley, Odyssey Press, Ginn and Company, Syracuse University Press, University of Oklahoma Press.

Manuscript referee for *Science*; *Environment*; *Annals*, AAG; *Economic Geography*; *Geographical Review*; *Journal of Developing Areas*; *The Professional Geographer*; *Journal for Risk Analysis*; *Social Science Quarterly*; *Industrial Ecology*; *Environmental Hazards*; *Ecology and Society*; *Environmental Science and Policy*; and too many others to list.

Proposal evaluator, Human Geography and Regional Science Program, Division of Policy Research and Analysis, Program in Ethics and Values Studies, and numerous other programs, National Science Foundation.

Proposal evaluator, Committee for Research and Exploration, National Geographic Society.

Other

U.S. Army Service 1960-64 (Germany); received Army Commendation Medal for achievements as an administrator.

Research Interests

Realizing sustainable development.

Relationships between society and technology.

Responses to concerns about global environmental change.

Sustainable energy futures.

Scale as an issue in nature-society research.

Energy and environmental policy analysis, including technology assessment; regional assessment; environmental, social, and economic impact assessment; R&D policy -- especially clean energy futures and challenges in achieving them

Institution-building, especially for R&D activities and for energy and environmental policymaking and decisionmaking.

Structures, procedures, and policies that build consensus.

Geography and technological change.

Regional development, particularly problems of developing regions and cross-cultural comparisons of determinants.

Teaching Interests

Sustainable development.

Technology, society, and environment.

Energy alternatives.

Regional development.

Location and public policy.

Research methodology.

Other Teaching Experience

Energy and environment.

Evaluation of environmental impacts.

Quantitative methods in geography.

Introductory and intermediate economic geography.

Regional science.

Applications of systems theory and systems analysis.

Pattern, environment, and human behavior (an introductory course).

South Asia.

Seminars on various topics.

Other Educational Interests

Interdisciplinary cooperation in research and teaching.

Geographic education, especially pedagogy and curriculum design.