

# Graciela Chichilnisky

## Position/Department/Division/Institution/Organization

Co-Founder & CEO, Global Thermostat

Professor of Economics and Mathematical Statistics, Columbia University

Director of the Columbia Consortium for Risk Management, Columbia University

## Country

USA

## Career history

### Academic Positions:

2020 1979	Professor of Economics and Statistics at Columbia University, Tenured since 1979
2015 - 2016	Visiting Professor of Economics Stanford University and Stanford Institute of Economic Policy Research (SIEPR)
2011- 2012	Distinguished Visiting Professor, Beijing Normal University, Beijing, China
2010 -	Distinguished Guest Professor, Nankai University, China
2007 - 2010	International Monetary Fund Institute, Washington DC, June 2007
2007 - 2012	Sir Louis Matheson Distinguished Professor, Monash University, Melbourne, Australia
1998 -	Director, Columbia Consortium for Risk Management (CCRM)
1996, 2002 July 2002	Visiting Academic, Deakin University, Melbourne, Australia, August 1996, July 2002
1996	Visiting Professor, Ecole des Hautes Etudes en Sciences Sociales and University of Paris X, Nanterre, June-July 1996
1995 - 2008	UNESCO Professor of Mathematics and Economics
1994 -	Director, Program on Information and Resources, Columbia University (PIR)
1994 - 1995	Salinbemi Chair, Universita di Siena, Italy
1993 - 1994	Visiting Professor of Economics and Operations Research, Department of Economics, Department of Operations Research, and Institute for International Studies, Stanford University
1993, 1994	Professor Visitante, Universidad Catolica de Buenos Aires, Argentina, August 1993, April 1994
1991 - 1993	Visiting Professor, Stanford Institute for Theoretical Economics (SITE), Stanford University, Summers of 1991, 1992, 1993, and 1994

1991, 1992	Visiting Professor, University of Siena, Italy, Summer Terms of 1991-1993
1984 - 1985	Professeur Missionnaire, Universite des Antilles et de la Guyane, Short Term visits, Spring terms
1983 - 1984	Visiting Professor, Institute of Mathematics and its Applications, University of Minnesota
1980 - 1981	Keynes Chair in Economics, University of Essex, United Kingdom
1979 -	Professor of Economics, Columbia University, Tenured since 1979
1978	Fellow, Harvard Institute of International Development, Harvard University
1977 - 1980	Associate Professor of Economics, Columbia University, Tenured since 1979
1977 - 1978	Lecturer, Department of Economics, Harvard University
1977	Postdoctoral Fellow, Harvard University

### **Professional Positions:**

2020 -	Member of the editorial board of Energies
2018 -	Member of the editorial board of Economics of Disasters and Climate Change
2018 -	Advisor/Board member to H.S.H. Prince Albert II of Monaco – Transition Forum
2014 -	Associate Editor, International Journal of Economics and Finance
2013 -	Board Member, American Renewable Energy Day
2013 -	Board Member, WIFO-Monatsbericht Editorial Board, Vienna, Austria
2012 -	Member of Scientific Advisory Board of the Austrian Institute of Economics Research, Vienna, Austria
2012 -	Board Member, Ethical Markets Media, Florida
2011 -	Member, Board of Advisors, The Capital Institute, New York
2011 -	Executive Advisory Board, The Columbia Institute for Tele-Information (CITI) at Columbia Business School
2011 -	Guest Editor, Economic Theory: Special Issue on Economic Theory and the Global Environment. Vol. 49, No. 2, February 2012.
2010- 2012	Referee for the Annual Conference of the European Association of Environmental and Resource Economists
2009 -	CEO of Global Thermostat
2009 -	Editor for the Journal Environmental Economics
2009 -	Member, Board of Directors of Global Thermostat
2006 -	Editorial Board, Scientific Journal International
2002 -	Editorial Board, SocioTopology, VNTL Publishers
2002 -	Editorial Board, Nonlinear Analysis, Pergamon Press

- 2002 Member of Board of Trustees, Mediterranean College, Athens, Greece
- 2001 - Member of Editorial Board of Risk Decision and Policy
- 2001 - Editorial Advisory Board, Arthaniti, Department of Economics, University of Calcutta, India
- 1999 - 2000 National Selection Committee, Fulbright Fellows, USA
- 1999 - Member of Advisory Board of Metroeconomica
- 1996 - 1998 US Lead Author, Intergovernmental Panel on Climate Change (IPCC)
- 1999 - Member of Board of Editors, Review of Development Economics
- 1998 - Member of the Editorial Advisory Council, Pacific Economic Review
- 1997 Advisor, United Nations Framework Convention on Climate Change, Lead Negotiator of Kyoto Protocol , EU Committee member and Advisor to Ambassador Raul Estrada Oyuela. In charge of writing carbon market into Kyoto Protocol
- 1997 Member of Board of Editors, Journal of Economic Integration, Institute for International Economics Sejong Institution, Seoul, Korea
- 1997 - Member of Editorial Board, Advances in Applied Mathematics, MIT, Cambridge, Massachusetts
- 1997 - Member of Editorial Board, Non-Linear World, International Federation of Nonlinear Analysts (IFNA)
- 1997 - Member of the Technical and Scientific Advisory Committee for the International Program on Research and Development, Ministry of Environment, Water Resources and Legal Amazon, Brazil
- 1996 - 2000 Editorial Board, International Review of Economics and Finance JAI Press Inc, Greenwich, Connecticut
- 1996 - 1997 Member of the Second National Forum on Biodiversity, National Academy of Sciences, Washington, DC
- 1996 - Editorial Board, Risk, Decision & Policy, London United Kingdom
- 1996 - Member of the Editorial Advisory Council, Pacific Economic Review, Blackwell Publishers, Oxford, United Kingdom and Cambridge, Massachusetts
- 1994 - Member, Advisory Board, Metroeconomica, Blackwell Publishers Journal, Oxford, United Kingdom
- 1993 - 1996 Contributing Author and Advisor, Intergovernmental Panel on Climate Change (IPCC)
- 1993 - 1996 Editorial Board, Economics Letters Elsevier Science SA, Lausanne, Switzerland

1993 – 1994	Chair, Organizing Committee, Conference and Workshop on Geometry, Topology and Markets, The Fields Institute of Mathematical Sciences, Canada
1993 - 1994	Member, Program Committee, Econometric Society North American Summer Meetings, Toronto, Canada
1993 -	Editorial Board, Journal of International Trade and Economic Development, Routledge, London, United Kingdom
1993 -	Editorial Board, Journal of International and Comparative Economics Physica-Verlag, Heidelberg, Germany
1991 - 1996	Member of the Council of Social Choice and Welfare Society, Editorial Board, Social Choice and Welfare, Springer-Verlag, Berlin, Germany
1985 -	Editorial Board, International Journal of Development Planning Literature Spellbound Publications, Rohtak, India
1984 - 1996	Editorial Board, Social Choice and Welfare, Springer-Verlag, Berlin, Germany
1981 - 1986	Editorial Board, Review of Economic Studies, Blackwell Publishers, Oxford, United Kingdom
1980 - 1985	Editorial Board, Advances in Applied Mathematics Academic Press, Orlando, Florida
1976 - 1986	Associate Editor, Journal of Development Economics, Elsevier Science, Amsterdam, The Netherlands

## **Awards/Publications**

### **Listed In:**

- “Great Immigrants – Great Americans,” New York Carnegie Foundation, New York Times, A5, 7/4/2017
- “Great Minds of the 21st Century” 2008 – 2009
- 1000 Outstanding Scholars of the 21st Century
- 2000 Outstanding Intellectuals of the 21st Century
- Dictionary of International Biography
- Men of Achievement
- Outstanding People of the 21st Century
- Strathmore’s Who’s Who
- Who is Who in America
- Who is Who in American Education
- Who is Who in the East
- Who is Who in the World
- Who is Who of Intellectuals

- Who is Who of Science and Engineering
- Top 10 Most Influential Latinos in USA – Hispanic Business Magazine 2007

### **Honors, Awards, and Selected Presentations:**

- 2020 Lead Keynote Speech - “Direct Air Capture of CO<sub>2</sub> – the New Carbon Revolution - EarthX Energy|Renewables Conference, 4/24/2020
- 2020 Featured Panelist – “Carbon Negative Design,” Tufts Energy Conference - Climate Emergency: Solutions for a Clean Energy Transition, 2/29/2020
- 2020 Featured Panelist – “Climate Action – The Private Sector’s Role in Reducing Greenhouse Gases,” 10th Annual Social Innovation Symposium - 10 Big Ideas in Social Innovation, 2/28/2020
- 2019 “The Gender Gap” in Women in an Inclusive Economy – Center on Capitalism and Society Organized by Nobel-laureate, Edmund Phelps, at Columbia University’s Italian Academy, New York, NY, 4/19/ 2019
- 2018 “Albert Nelson Marquis Lifetime Achievement Award” 2017-2018 recipient (Featured in the Wall Street Journal, 7/15/2018)
- 2018 “Quantum Theory and Social Choice” – Invited Address, XXV11 European Workshop on General Equilibrium Theory (EWGET), University of Paris Sorbonne, 6/28/2018
- 2018 Lead Keynote Speech – “The Mathematics of Uncertainty”, Bucknell University’s Sixth Annual Sustainability Symposium, March 2018
- 2017 “Great Immigrant Great American” Award Carnegie Corporation NY (Featured in New York Times, Page 5, 7/4/2017)
- 2015 “2015 CEO of the Year Award,” Yale University Club, New York, IAIR, 4/16/2015
- 2015 Keynote Speaker - “Rethinking Capitalism: Sustainability with Graciela Chichilnisky,” The Buchanan Institute, Edinburgh, Scotland, 5/14/ 2015
- 2014 “Global Leadership” Prize, American Renewable Energy Institute Aspen, Colorado, 8/10/2014
- 2014 Opening Keynote Address - “Avoiding Extinction,” Indian Institute for Foreign Trade (IIFT) New Delhi, India, 12/13-19/2014
- 2014 Keynote Speaker - “Avoiding Extinction,” LUCID, New York, 10/15/2014
- 2014 Keynote Speaker - “Avoiding Extinction,” Closing the Carbon Cycle for Sustainability, I-SUP Conference, Antwerp, Belgium, 9/1-3/2014
- 2014 Keynote Address - “Avoiding Extinction,” American Renewable Energy Day (AREDAY), Aspen, Colorado, 8/10-13/2014
- 2014 Keynote Speaker - “International Seminar on Green Economics: the Road to a

- Balanced & Healthy Economy,” Meghalaya Economic Association, in collaboration with the Indian Institute of Management, Shillong, India, 8/7/2014
- 2014 Keynote Speaker - “Avoiding Extinction,” Annual Conference Green Economics Institute, Oxford University, Trinity College, 7/2014
- 2014 Opening Keynote Speaker - “Green Capitalism: The End of Fear,” EuroMoney Conference on Sustainable & Responsible Capital Markets: Investing & Financing for a Better Future, New York, 3/12/2014
- 2013 Plenary Keynote Speaker “The Foundations of Probability with Black Swans,” International Congress of Mathematicians Annual Meeting, University of New South Wales, Australia, 12/11/2013
- 2013 Presentation “CO<sub>2</sub> Capture: A Clean and Sustainable Alternative Applicable to Bioenergy,” Bio-energy Conference of the Americas, Medellin, Colombia, 10/10-11/2013
- 2013 TEDx Talk - “Avoiding Extinction,” National Technical University, Buenos Aires, Argentina, 5/4/2013
- 2013 Board Member, American Renewable Energy Institute. Aspen, Colorado, 5/2/2013
- 2013 Keynote Speaker - “The Economic Future of Europe,” In Modeling Growth and Socio-Ecological Transition, Austrian Institute of Economic Research (WIFO), Vienna, Austria, 3/12-14/2013
- 2012 Plenary Talk - “The Foundations of Probability & Statistics with Black Swans,” Annual International Meeting of the Mathematical Society & the Canadian Mathematical Society, Montreal, Canada, 12/8-10/2012
- 2012 Keynote Speaker - “Avoiding Extinction: Air Capture of CO<sub>2</sub>,” Air Capture Seminar, UK Institute of Mechanical Engineers, London, 10/16/2012
- 2012 “Avoiding Extinction,” Invited presentation to Department of Engineering Sciences, University of Oxford, Oxford, United Kingdom, 10/15/2012
- 2012 Speaker - “Why Economists Disagree,” Helix Center Roundtable, Helix Psychoanalytic Society Institute, New York, 10/13/2012
- 2012 Panelist - Blouin Creative Leadership Summit. Louise Blouin Foundation, New York, NY, 9/20-21/2012
- 2012 Speaker and Moderator - European Association of Environmental and Resource Economists (EAERE), the Fondazione Eni Enrico Mattei (FEEM) and the University of Catania’s (UNICT) 2012 Belpasso International Summer School on Environmental and Resource Economics, Belpasso, Sicily, Italy, 9/2-8/2012
- 2012 Keynote Speaker - “Sex and the Ivy League,” North Shore Branch of the American Association of University Women (AAUW) Legal Action Fund Luncheon, Great



- Neck, NY, 4/26/2012
- 2012 Invited Speaker - “Markets with Black Swans,” Duncan Foley Festschrift, New School, New York, NY, 4/20/2012
- 2012 Keynote Speaker - “Carbon Capture and Use initiatives in US and Europe,” Calgary Economic Development, Calgary, Alberta, Canada, 3/9/2012
- 2012 Keynote Speaker - “The Kyoto Protocol Carbon Market: Reflections by its Author,” Confluence Philanthropy Practitioners Meeting, Sausalito, CA, 1/26/2012
- 2011 Featured Keynote Speaker - “History and Future of Economics and Its Methodology,” Reform of Economics Workshop at Mansfield College, Oxford, United Kingdom, 11/19/2011
- 2011 Speaker - “Calgary Clean Tech Summit,” Global Clean Energy Congress (GCEC), Calgary, Canada, 11/2/2011
- 2011 Speaker - “Virgin Earth Challenge Conference,” Pricewaterhouse Coopers LLP, London, United Kingdom, 10/26/2011
- 2011 Keynote Speaker - “Global Efforts to Address Climate Change,” Sci-Fest Presentation, St. Louis Science Center, St. Louis, Missouri, 10/22/2011
- 2011 Presentation - “The Global Commons,” Center in Political Economy Seminar Series, Washington University, St. Louis, Missouri, 10/21/2011
- 2011 Keynote Speaker - “Avoiding Extinction,” at Back2Black Festival, Rio de Janeiro, Brazil, 8/27/2011
- 2011 Invited Presentation - “Carbon Negative Technology,” American Renewable Energy Day, Aspen, Colorado, 8/18-21/2011
- 2011 Keynote Speaker - “A Brief History of Western Economics,” New York University, New York, NY, 6/15/2011
- 2011 Keynote Speaker - Plenary Panel of CO<sub>2</sub> Utilization Workshop, UC Berkeley, Berkeley, California, 2/17-18/2011
- 2010 Panelist - “Reality Check – Information & Communication Technologies for Development: What is Holding Us Back,” United Nations, Yas Marina Circuit, Yas Island, Abu Dhabi, United Arab Emirates, 12/5/2010
- 2010 Panel Moderator - “Broadband Networks and Smart Grids at the Crossroad between ICT and Energy,” CITI Conference, Columbia University, New York, NY, 12/3/2010
- 2010 Panelist = “Second Encounter: The Challenge of Preserving Life,” Encuentro en Mexico: Construyendo Futuros, Nonoalco-Tlatelolco, Mexico, 10/20/2010
- 2010 Keynote Speaker - Financial Times Conference on Sustainable Banking Renaissance, London, United Kingdom, 6/3/2010

- 2010 Keynote Speaker - “Sex and the Ivy League,” American Association of University Women of New Jersey Annual, New Jersey, 4/17/2010
- 2010 Headline Speaker - "Names Not Numbers," Second Annual Editorial Intelligence Symposium known as ‘British Davos’ – Rock Royalty, Business Leaders and Global Gurus, Portmeirion, North Wales, 2/26-28/2010
- 2010 Special Lecture - “What Happened in Copenhagen,” Organized by Université de la Méditerranée, Greqam- Idep and cosponsored by Université Montpellier – LAMETA, Marseille, France, 2/5/2010
- 2009 Featured Keynote Address - “Saving Kyoto: Copenhagen: Do or Die,” American Hellenic Chamber of Commerce – The Greek Economy Conference, Athens, Greece, 11/30/2009
- 2009 Opening Keynote Speaker - “Preparing for Copenhagen: Saving Kyoto,” Green Economics Institute Conference, “Greening the Economy,” Oxford University, Oxford, United Kingdom, 11/28/2009
- 2009 Keynote Address and Organizer - "The Rising Tide at Copenhagen: A Win- Win Solution for Industrialized and Developing Nations,” Forum on "Developing Technical and Financial Solutions for the Survival of Small Island Developing States (SIDS): Looking Beyond Copenhagen," Cosponsored by the Alliance of Small Island States (AOSIS) and the Columbia Consortium for Risk Management (CCRM), 11/12/2009
- 2009 Keynote Speaker - “The Gender Gap,” 24orMore International Conference on Increasing the Labour Participation of Women, Amsterdam, The Netherlands, 11/5/2009
- 2009 Keynote Speaker - Water Planted Dialogue, Aspen Institute, Queenstown, Maryland, 10/20-23/2009
- 2009 Keynote Speaker - Graduate Institute for International and Development Studies Colloquium on Global Environmental Change and Its Impact on Human Societies, Geneva, Switzerland, 10/8-9/2009
- 2009 Public Lecture - “Saving Kyoto,” Festival of Ideas, Bristol, United Kingdom, 10/2/2009
- 2009 Brainstorming Session - World Economic Forum Global Risk, London, United Kingdom, 10/1/2009
- 2009 Public Lecture - “Saving Kyoto: Copenhagen and Beyond,” Royal Society of Arts (RSA), London, United Kingdom, 10/1/2009
- 2009 Keynote Speaker - “Climate Change: Are we headed for a New Cold War?,” London



- School of Economics (LSE), London, United Kingdom, 10/1/2009
- 2009 Keynote Lecture - “What is Sustainability?,” INFER Workshop – Sustainable Public Finances in a Turbulent Global Economy, Klagenfurt University, Klagenfurt, Austria, 9/29/2009
- 2009 Keynote Speaker - “Green Economics: Can it Avert Another Cold War,” 4th Annual Green Economics Conference, Oxford University, Oxford, United Kingdom, 7/31/2009
- 2009 Keynote Speaker - “How to Overcome the China – US Impasse in the Global Climate Negotiations,” Expert Meeting on Trade and Climate Change: Trade and Investment Opportunities and Challenges Under the Clean Development Mechanism (CDM), Geneva, Switzerland, 4/27- 29/2009
- 2009 Keynote Speaker - “Beyond the Global Divide: From Basic Needs to the Knowledge Revolution,” Gosnell Lecture Series, Rochester Institute of Technology, Rochester, NY, 4/14/2009
- 2009 Keynote Speaker and Organizer - “Sustainable Energy and Environment Caucus,” One Day Event at U.S. Congress, U.S. Senate (participation included 37 members of the House of Representatives), Capitol Hill, Washington DC, 3/31/2009
- 2009 Panelist - “Environment & Development,” Energy Impact Conference, Geneva, Switzerland, 3/16-17/2009
- 2008 Keynote Speaker - “Extreme Uncertainty & the Value of Life,” Seminar Series in Economics at Greqam University of Aix-Marseille, 12/15/2008
- 2008 Keynote Speaker - “Sustainable Development – Cost Benefit Analysis Balancing the Present and the Future,” University of Montpellier, 12/10/2008
- 2008 Keynote Speaker - “Tecnología y el Sistema Productivo,” 8th Congreso de Economía, Buenos Aires, Argentina, 11/19/2008
- 2008 Keynote Address - “Emissions Trading and Climate Change at the House of Parliament,” Members of Australian Parliament, Melbourne, Australia, 11/12/2008
- 2008 Keynote Speaker - “Averting Climate Change: New Financial Mechanisms and Technologies’,” Governance, Organizations and Regional Development Conference, Deakin University, Melbourne, Australia, 8/1/2008
- 2008 Keynote Speaker - “Financial Mechanisms and New Technologies: Bridging the Gap between Industrial and Developing Nations in the Global Climate Negotiations,” Monash University, Workshop on Emissions Trading for Australia, 8/1/2008
- 2008 Keynote Speaker – “Energy Security and Climate Change: Financial Mechanisms

- and New Technologies,” Fundacion Rafael Del Pino, Madrid, Spain, 7/8/2008
- 2008 Keynote Speaker - “Global Financial Mechanisms for International Payments for Ecosystem Services: Watersheds, Forests, DNA & Indigenous Knowledge, and the Global Spectrum,” First UNEP Working Group Meeting on Economics, Kenya, 5/6-8/2008
- 2008 Keynote Speaker - “The Carbon Market, Past and Future,” Carbon Finance North America 2008, New York, NY, 6/4-6/2008
- 2008 Radio Interview - “Understanding Carbon Markets,” The Sound Of Ideas, hosted by Dan Moulthrop, National Public Radio, Cleveland, Ohio, 6/4/2008
- 2008 Keynote Speaker - “Regional Development & Catastrophic Risks of Natural Events,” Asamblea Annual de Economistas de Puerto Rico, Puerto Rico, 8/22/2008
- 2008 Keynote Speaker - Global Convention on Climate Change, Palampur, India, 5/30-6/1/2008
- 2008 Keynote Speaker - COP9 Convention of Biological Diversity, Bonn, Germany, 5/24/2008
- 2007 Institute Environment Seminar Fiscal Affairs Department, International Monetary Fund, “Policies to Counteract Global Warming Financial Markets Can Overcome the China US Impasse Market,” 10/2007
- 2007 IMF Presentation - “Climate Change: Financial Innovation and The Carbon Market,” IMF, Washington, DC, 6/2007
- 2007 Organizer & Bipartisan Briefing in U.S. Congress - “Energy Security and Climate Change in the Americas,” Capitol Hill, Washington DC, 5/23/2007
- 2007 Senior Advisor to President Robert Shelton, University of Arizona
- 2007 “Speaking Out For Justice” Award from Feminists Against Academic Discrimination
- 2006, 2007 Co-Chair of Latin Economic Forum at the United Nations Headquarters, New York, April 2006, September 2007
- 2006 Invited Presentation - “The Topology of Fear,” University of Kansas, 9/18-20/2006
- 2006 Invited Presentation - “The Limits of Econometrics: Non-Parametric Estimation in Hilbert Spaces,” (Organized by Prof. Peter Phillips, Yale Univ., in honor of Prof. Rex Bergstrom), University of Essex, Colchester, United Kingdom, 5/24-25/2006
- 2006 Special Advisor, President Oscar Arias, Costa Rica
- 2006 Selected Top Ten Most Influential Latinos in the US, Hispanic Business Magazine
- 2006 Program Committee of the 3rd World Congress of Environmental Economists, Kyoto, Japan, 7/3-7/2006

- 2006 Special Advisor, Plenary of the World Federation for United Nations Associations
- 2006 – 2012 Elected Member of Columbia University Faculty Senate
- 2006 Senior Advisor Member of Board of Advisors, Flandrau Science Center, University of Arizona
- 2006 Executive Director, Global Education, European American Women Council (EAWC)
- 2006 Keynote Speaker (with Finn Kydland, 2004 Nobel Laureate in Economics) - Global Finance and Latin America: Financial Innovation and the Kyoto Protocol, Global Finance Conference, Rio de Janeiro, Brazil, 4/26-27/2006
- 2006 Co-Chair - Second Annual United Nations Forum on Latin America, United Nations Headquarters, New York, NY, 4/19-20/2006
- 2006 Invited Lecture - “Science and the Division of Labor,” City University of Hong Kong Department of Economics
- 2006 Invited Lecture - “Beyond the Global Divide: From Basic Needs to the Knowledge Revolution,” Chinese University of Hong Kong, MBA Program, China, 3/2006
- 2006 Invited Lecture - “Global Finance and the Kyoto Protocol,” Chinese University of Hong Kong, Departments of Economics and Business, China, 3/2006
- 2005 Member - Social Science Research Council Group on Privatizing Risk, Invited Speaker - Center for American Progress, Washington, DC, 12/2005
- 2005 Invited Lecture - “Axioms of Choice and the Equity Premium Puzzle,” Mathematics Finance Seminar, Courant Institute for Mathematical Sciences, New York University, New York, NY, 10/2005
- 2005 Keynote Speaker - “Axioms of Choice and Rare Events,” General Equilibrium Conference in Honor of Gerard Debreu (Nobel Laureate in Economics), University of California at Berkeley, California, 10/2005
- 2005 Keynote Speaker - “The Gender Gap,” International School for Economic Research (ISER), University of Siena, Italy, 7/3-4/2005
- 2005 Chair and Keynote Speaker (with Mary Robinson, former President of Ireland) - Globalization of Finance and Europe, 12th Annual Global Finance Conference, Trinity College, Dublin, Ireland 6/27-29/2005
- 2005 Leading Thinker - Kiel Institute’s Leading Thinkers in Global Economics Affairs, Kiel, Germany, 6/24-25/2005
- 2005 Keynote Speaker - “Beyond the Global Divide,” International Conference on Business Management & Economics in a Changing World, Yasar University, Turkey, 6/16/2005
- 2005 Invited to deliver First Lecture in Honor of Gerard Debreu (Nobel Laureate in

- Economics) - General Equilibrium Workshop, University of Zurich, Switzerland, 5/21-22/2005
- 2005 Invited Seminar Speaker - “Beyond the Global Divide: From Basic Needs to the Knowledge Revolution,” Ecole Polytechnique, Institute du Development Durable et des Relations Internationales (IDDRI), Paris, 5/17/2005
- 2005 Executive Director - Global Education, European American Women Council (EAWC)
- 2005 Member - Villa Mondragone Association, Rome, Italy
- 2005 - 2007 Trustee - Mediterranean College, Athens, Greece
- 2004 Invited Presenter - “Sex and the Ivy League,” American Association of University Women (AAUW) and the Florida Women Lawyers Association, Miami, Florida, 11/21/2004
- 2004 Invited Seminar - Department of Agricultural and Resource Economics, University of California at Davis, California, 10/15/2004
- 2004 Invited Address - “Volatility and the Knowledge Economy,” Meeting in Honor of David Cass, Wharton School, University of Pennsylvania, Pennsylvania, 10/10/2004
- 2004 Presentation on Global Network of Science Centers and Job Training to the Executive Board of Directors, Flandrau Science Center, University of Arizona, Arizona, 9/20/2004
- 2004 Presentation to Radio Program Straighttalk - National Public Radio, Miami, Florida, USA
- 2004 Senior Advisor - Flandrau Science Center, University of Arizona, Arizona
- 2004 Keynote Speaker - Special Address to the Florida Association of University Women and the Florida Women Lawyers Association, Miami, Florida, 10/3/2004
- 2004 Keynote Speaker - International Conference on Economics of Sustainable Forest Management, University of Toronto, Canada
- 2004 Invited Speaker - Conference in Honor of Dave Cass, University of Pennsylvania Department of Economics, 10/8-10/2004
- 2004 Invited Speaker - Workshop of Time Preferences (organized by Professor Karl Vind), University of Copenhagen, Denmark, 5/21-23/2004
- 2004 Keynote Speaker - “Sex and the Ivy League,” Florida State Convention of American Association of University Women (AAUW), Orlando, Florida, 4/30-5/2/2004
- 2004 Invited Address - “The Greening of Bretton Woods,” Symposium of Environmental Policies in Decentralized Governmental Systems: A Blueprint for Optimal Governance, Porto Coute Ricerche Center, Sardinia, Italy, 3/17-20/2004

- 2004 Invited Address - “The Mathematics of Diversity,” Brown Symposium for Undergraduates in Mathematical Sciences (SUMS) sponsored by National Science Foundation, Brown University Department of Mathematics, 2/28/2004
- 2004 Invited Address - “Sex and the Ivy League,” Women in Science and Engineering (WiSE), Brown University, 2/27/2004
- 2004 Panelist - United Nations Panel of Women Leaders, United Nations, New York, 3/8-9/2004
- 2003 Keynote Lecture - Twelfth International Colloquium on Numerical Analysis and Computer Sciences with Applications, Plovdiv, Bulgaria, 8/12-17/2003
- 2003 Keynote Speaker - Columbia University & Faculty Women, New York State Convention, American Association of University Women (AAUW), Islandia, New York, 4/25-27/2003
- 2003 Keynote Speaker - Columbia University & Faculty Women, Pennsylvania State Convention, American Association of University Women (AAUW), State College, Pennsylvania, 4/4-6/2003
- 2003 Special Lecturer - Global Environment and the World Economy for the course “Science and Society,” Department of Earth and Environmental Sciences, Columbia University, New York, 4/28/2003
- 2003 Keynote Speaker - Five Lectures on International Markets, Biosphere and Society to a group of Scandinavian Universities, University of Southern Denmark Department of Environmental and Business Economics, Denmark, 3/14-18/2003
- 2002 Invited Speaker - University of Michigan – Ann Arbor Department of Economics, 10/31/2002
- 2002 Invited Speaker – Columbia University Graduate Course, “Earth-Human Systems Department of Earth and Environmental Sciences,” New York, NY
- 2002 Presentation - Trade Execution Congress, New York, New York, 4/15-16/2002
- 2002 Invited Lecturer - Organizing Committee of the Eleventh International Colloquium on Numerical Analysis and Computer Science with Applications, Sofia, Bulgaria, 8/12-17/2002
- 2002 Invited Professor - “Globalization and the Environment,” University of Siena, Italy, 6/16-21/2002
- 2002 Invited Lecturer and Visiting Academic - Deakin University, Australia, July
- 2002 Invited Lecturer - University of Wollongong, Australia, August
- 2002 Invited Lecturer - Australian National University, Australia, August
- 2001 Chairman - The Enhanced Indexing Summit (Organized by The Institute for International Research), San Diego, California, 10/15-17/2001

- 2001 Guest Speaker - “New Risk Instruments for Global Markets,” Forum on Operational Risk Management (Organized by The Institute for International Research), New York, NY, 7/30-31/2001
- 2001 Invited Speaker - “Exploring Strategies and Technologies Poised to Catapult the Securities Industry to ‘T+0’,” Straight Through Processing Forum (Organized by The Institute for International Research), New York, NY, 6/25-26/2001
- 2001 Keynote Speaker - “The Economic Value of the Earth Resources” (published in The Biodiversity Crisis Losing What Counts, New York Press, 2001), The Biodiversity Crisis, University of Toronto, Canada
- 2001 Chairman and Organizer - International Conference Catastrophic Environmental Risks, 2001, Fields Institute for Mathematical Sciences, University of Toronto, Canada, Presentation published as An Axiomatic Approach to Choice Under Uncertainty in Topology and Social Choice
- 2000 Invited Lecturer - “Hedging Chaotic Risks,” Università degli Studi di Roma Department of Mathematics, La Sapienza, Italy, October
- 2000 Chair - Board Meeting, Reinsurance Companies Supporting the Columbia Center for Risk Management, Columbia University, New York, NY, 8/3/2000
- 2000 Chair and Organizer - Reuters Forum, “The Green Hand - Are Efficient Markets the Path to Sustainable Development?,” Columbia University Graduate School of Journalism, New York, NY, 5/3/2000
- 1999 Keynote Address - XII World Congress of the International Economics Association, Buenos Aires, 8/23-27/1999
- 1999 Keynote Address - “General Equilibrium: Problems, Prospects, and Alternatives,” 12th Workshop of the International School of Economic Research, Siena, Italy, July
- 1999 Three Distinguished Lectures (Pegram Lectures), Biosphere and Society, Brookhaven National Laboratory, Brookhaven, NY, 3/12, 15, & 17/1999
- 1998 Keynote Address - “Advances in Emissions Trading,” Third International Symposium on Global Accords for Sustainable Development, Massachusetts Institute of Technology, Cambridge, MA, 9/4/1998
- 1998 Public Lecture - National Academy of Sciences - Biosphere and Society, June
- 1998 Presentation to the U.S. Congress Technology Committee, “Emissions Trading and Economics Efficiency,” Washington, DC, June
- 1998 Keynote Address - “Clean and Sustainable Industrial Development,” General Assembly of UNIDO Meeting on Industrialization in the 21st Century, Vienna, May



- 1998 Organized and Led the International Conference - “Kyoto to Buenos Aires: Technology Transfer and Emissions Trading,” Columbia Earth Institute, Italian Academy, New York, 4/24-26/1998
- 1998 Executive Course Organizer - Finance and Insurance, Columbia Risk Management, Hamilton, Bermuda, 3/13-18/1998
- 1998 Host - Distinguished Lectures on the Global Environment, Program on Information and Resources (PIR), Columbia University (with the participation of Ralph Gomory, Director of the Sloan Foundation, Professor Lynn Margulis of the University of Massachusetts, and Raul Estrada Oyeula Esq, Chair of the Negotiating Committee of the Kyoto Protocol, United Nations Framework Convention of Climate Change (UNFCC)), March 31, April 15, 28
- 1998 Keynote Address - “The Knowledge Revolution: Updating Property Rights,” Missouri Botanical Garden Conference on Managing Human Dominated Ecosystems, St. Louis, Missouri, March
- 1998 - 2000 Lead Author - IPCC Meetings, Intergovernmental Panel on Climate Change (IPCC) Meetings, Toronto, Canada, Washington DC, and Tucson, Arizona
- 1997 Keynote Address - “Markets with Endogenous Uncertainty,” Australasian Meetings of the Econometric Society, Melbourne, Australia, July
- 1997 Invited Lecturer - “Chaotic Risks,” IBM Research Division, Yonkers, New York, June
- 1997 Lecturer - Smithsonian Institution on Biosphere Reserves and World Heritage Sites, Washington, DC
- 1996 Keynote Address - “The Future of Global Reinsurance,” Independent Reinsurance Underwriters Association of the USA, New Jersey, 9/9/1996
- 1996 Keynote Presentation - “Environmental Markets: Equity and Efficiency,” New York University Law School, Florence, Italy, 7/22/1996
- 1996 Plenary Address - “A Topological Invariant for Competitive Markets,” Second World Congress of Nonlinear Analysts, Athens, Greece, 7/10-17/1996
- 1996 Chairman - Organizing Committee of the Workshop on Catastrophic Environmental Risks, The Fields Institute for Mathematical Sciences, Toronto, Canada, June
- 1996 Distinguished Lecturer - Managing the Global Environment: Between Equity & Efficiency, University of Paris, Paris, France, 6/19-27/1996
- 1996 Invited Address - “Property Rights in Markets for Knowledge,” American Economic Association Yearly Meetings, San Francisco, California, January
- 1995 Member - Review Panel on Mathematical Science Education, National Science

Foundation, June

- 1995 Invited Speaker and Session Chair - Topology & Resource Allocation, Conference on Current Trends in Economics: Theory and Applications, Cephalonia, Greece, 5/22/1995
- 1995 Keynote Plenary Address - “Markets with Emissions Trading: the Case for an International Bank for Environmental Settlements,” The Third Annual World Bank Conference on Effective Financing of Environmentally Sustainable Development, The World Bank, Washington, DC, 10/5/1995
- 1995 Leif Johansen Award - “Endogenous Uncertainty & Resource Allocation,” University of Oslo, Norway, March
- 1995 Invited Speaker - Topics in Mathematical Finance, Colloquium, Columbia University Department of Applied Mathematics, Columbia University, New York, NY, April
- 1995 Invited Speaker - “Perspectives of General Equilibrium Analysis,” Colloquium in Honor of Frank Kahn’s Seventieth Birthday, University of Siena Department of Political Economy, Siena, Italy, April
- 1994 Keynote Speaker - “Trade Regimes and GATT,” CIDEI, University of Rome, La Sapienza, December
- 1994 - 1998 Member - Board of Trustees, Natural Resources Defense Council (NRDC), New York
- 1994 David Kinley Distinguished Lecture - “Global Environmental Policy: Equity and Efficiency,” University of Illinois, Illinois, 11/28/1994
- 1994 Invited Speaker - “Limited Arbitrage, Gains from Trade and Social Diversity: a Unified Perspective on Resource Allocation,” University of California at Irvine, California, August
- 1994 Plenary Speaker - “Markets with Endogenous Uncertainty,” FUR VII OLSO Foundation of Uncertainty and Risk, July
- 1994 Invited Speaker - “What is Sustainable Development?,” Conference on Incommensurability and Value, Normandy, France, April
- 1994 Invited Speaker - Conference on Biological Diversity: Exploring the Complexities, University of Arizona, Arizona, March
- 1994 Invited Speaker - “A Unified Perspective on Resource Allocation,” International Economic Association Round Table on Social Choice, Vienna, Austria, May
- 1994 Invited Speaker - “Property Rights, North-South Trade, and the Global Environment,” Conference on Agricultural Trade and the Environment: Understanding and Measuring the Critical Linkages, International Agricultural

- Trade Research Consortium and the US Agency for International Development, Toronto, Canada, 6/17-18/1994
- 1994 Invited Minicourse - “Topology and Markets,” The Fields Institute of Mathematical Sciences of Canada, August
- 1994 Keynote Speaker - “Meanings of Equity,” Intergovernmental Panel on Climate Change (IPCC), UNEP, Nairobi, Kenya, July
- 1994 Contributing Author - IPCC, Equity and Social Considerations
- 1994 Keynote Speaker - “Markets with Emission Permits: Equity and Efficiency,” Ivon Conference on the Environment, Beijer Institute, Royal Swedish Academy of Sciences, Ivon, Sweden, May
- 1994 Invited Speaker - “Intersecting Families of Sets,” Colloquium, Department of Mathematics, University of California Berkeley, February
- 1994 - 1995 Salinbemi Chair, University of Siena, Siena, Italy
- 1994 Invited Speaker - “Arbitrage, Gains from Trade and Social Diversity: A Unified Perspective on Resource Allocation,” American Economic Association Yearly Meetings, Boston, 1/3-5/1994
- 1993 Invited Speaker - “A Topological Interpretation of Hirsch’s Monotone Dynamics,” Hirsch Symposium, Midwest Dynamical Systems Seminar, University of California Berkeley, California, 10/24/1994
- 1992 Invited Speaker - “The Topology of Markets and Games,” European Congress of Mathematicians, Satellite Seminar on Mathematics and Economics, Chaired by Gerard Debreu, Paris, 7/4/1992
- 1991 - 1993 Siena Fellowship - Monti di Pashi di Siena, University of Siena, Italy
- 1991 Most Distinguished Women Economist - Honor Society in Economics Award, Newcombe Foundation and ODE, Tulane University, Louisiana
- 1985 - 1986 Awarded National Science Foundation Professorship, University of California Berkeley, Department of Mathematics
- 1983 - 1984 Rockefeller Foundation - International Relations Award at Columbia University
- 1977 Fellowship - Banco Central de la Republica Argentina
- 1968 - 1969 Ford Foundation Fellowship - Studies in Mathematics, Massachusetts Institute of Technology

### **Books:**

1. Catastrophe or New Society? A Latin American World Model (co-author), International Development Research Center, Ottawa, Canada, 1976; translation of Catastrofe o Nueva Sociedad?, Fundacion Bariloche, 1976; translation to Japanese, Diamond, Inc, 1-412 Dasumigaseki, Chiyoda-ku, Tokyo, 1977. ISBN: 978-0889360839

2. Un Monde Pour Tous: Le Modele Mondial Latino-Americain, Presses Universitaires de France, Paris, 1977. ISBN: 978-0692092613
3. Grenzen des Elends, S Fischer Verlag GmbH, Frankfurt am Main, 1977. ISBN: 978-3100334015
4. The Evolving International Economy (with G. Heal), Cambridge University Press, 1986. ISBN: 978-0521267168
5. Oil in the International Economy (with G. Heal), Clarendon Press, Oxford University Press, 1991. ISBN: 978-0198285175
6. Development and Global Finance: The Case for an International Bank for Environmental Settlements, United Nations Development Program and United Nations Educational & Scientific Organization, Discussion Series #10, 1996- 1997. ISBN: 978-9211260649
7. Sustainability, Dynamics and Uncertainty (with G. Heal and S. Vercelli), Kluwer Academic Publishers, 1998. ISBN: 978-9401148931
8. Mathematical Economics, vol. I, II, and III, Edward Elgar Publishing Ltd, London, 1998. ISBN: 978-1858982601
9. Markets, Information, and Uncertainty, Cambridge University Press, New York, 1999. ISBN: 978-0521553551
10. Topology and Markets, American Mathematical Society and the Fields Institute for Mathematical Sciences, Toronto, Canada, 1999. ISBN: 978-0821871300
11. Environmental Markets: Equity and Efficiency, Columbia University Press, 2000. ISBN: 978-0231504478
12. The Evolving International Economy (with G. Heal), Cambridge University Press, Paperback edition, February 2006. ISBN: 978-0521310017
13. Saving Kyoto (with K. Sheeran), New Holland, United Kingdom, Fall, 2009. ISBN: 978-1847734310
14. The Economics of Climate Change, Edward Elgar Publishing Ltd, 2010. ISBN: 978-1847207678
15. The Economics of Global Environment: Catastrophic Risks in Theory & Policy (co-author with A. Rezai), Springer Verlag, Vienna, 2014-2015. ISBN: 978-3319319414
16. Reversing Climate Change: How Carbon Removals Can Resolve Climate Change and Fix the Economy (co-author with P. Bal), World Scientific Publishing, 2018. ISBN: 978-9814719353
17. Handbook on the Economics of Climate Change (co-author with A. Rezai), Edward Elgar Publishing Ltd, 2018. ISBN: 978-0857939050

**Publications:**

1. “Group Actions on Spin Manifolds,” Transactions of the American Mathematical Society, vol. 172, pp. 307-315, October 1972.

2. “Manifolds of Preferences and Equilibria,” Ph D Dissertation at UC Berkeley, 1976.
3. “Properties of Critical Points and Operators in Economics,” with P. J. Kalman, *Journal of Mathematical Analysis and Applications*, vol. 57, no. 2, pp. 340-349, February 1977.
4. “Spaces of Economic Agents,” *Journal of Economic Theory*, Academic Press, New York and London, vol. 15, no. 1, pp. 160-173, June 1977.
5. “Trends in Mathematical Modelling,” *Applied Mathematical Modelling*, vol. 1, June, 1977.
6. “Development Patterns and the International Order,” *Journal of International Affairs*, vol. 31, no. 2, pp. 275-304, Fall/Winter, 1977.
7. “Economic Development and Efficiency Criteria in the Satisfaction of Basic Needs,” *Applied Mathematical Modelling*, vol. 1, no. 6, pp. 290-297, September 1977.
8. “Nonlinear Functional Analysis and Optimal Economic Growth,” *Journal of Mathematical Analysis and Applications*, vol. 61, no. 2, pp. 504-520, November 15, 1977.
9. “Comparative Statics of Less Neoclassical Agents,” *Lecture Notes in Economics and Mathematical Systems, Some Aspects of the Foundation of General Equilibrium Theory* (Ed. J. Green), Springer-Verlag Publishing, New York, no. 159, pp. 61-76, 1978.
10. “Comparative Statics of Less Neoclassical Agents,” with P. J. Kalman, *International Economic Review*, vol. 19, pp. 141-148, February 1978.
11. “Problems of Market Adjustments to Occupational Safety and Health Hazards,” *Technical Report*, Office of Assistant Secretary for Policy, Evaluation and Research (ASPER), U.S. Department of Labor, no. B-9-D-63788, February 1978.
12. “Modelling with Scenarios: Technology in North-South Development,” with S. Cole, *Futures*, pp. 303-321, August 1978.
13. “Technology Distribution and North-South Relations,” with S. Cole, *UNITAR Report, Project on the Future*, pp. 1-90, August 1978.
14. “An Extension of Comparative Statics to a General Class of Optimal Choice Models,” with P. J. Kalman, *Lecture Notes on Economics and Mathematical Systems, Some Aspects of the Foundations of General Equilibrium Theory: The Posthumous Papers of Peter J. Kalman* (Ed. J. Green), Springer-Verlag Publishing, New York, no. 159, pp. 1-25, 1978.
15. “Some Results from a Model of Trade, Aid and the Development of the South,” (Eds. Acero, Cole and Rush), *Issues and Analysis of Long Term Development, Proceedings of Seminar at the Institute of Development, University of Sussex*, November 20 - December 2, 1978.
16. “A Model of Technology, Domestic Distribution and North-South Relations,” with S. Cole, *Technological Forecasting and Social Changes*, vol. 13, no. 4, pp. 297-320, May 1979.
17. “Thought and Action to Date Towards a Conceptual Framework - Four Position Papers,” with B. Roling, N. Ball, M. Leitenberg, and U. Albrecht, *Disarmament and Development*, pp. 1-64, June 1979.

18. “Comparative Statics and Dynamics of Optimal Choice Models in Hilbert Spaces,” with P. J. Kalman, *Journal of Mathematical Analysis and Applications*, vol. 70, no. 2, pp. 490-504, August 1979.
19. “On Fixed Point Theorems and Social Choice Paradoxes,” *Economic Letters*, vol. 3, pp. 347-351, 1979.
20. “Models and Mystification: The Use of Mathematics to Support Vested Interests,” *Models, Planning and Basic Needs* (Eds. S. Cole and H. Lucas), Pergamon Press, pp. 165-171, 1979.
21. “A Model of the Relation between Technology and North-South Income Distribution,” with S. Cole and J. Clark, *Models, Planning and Basic Needs* (Eds. S. Cole, H. Lucas), Pergamon Press, pp. 87-96, 1979.
22. “Application of Functional Analysis to Models of Efficient Allocation of Economic Resources,” with P. J. Kalman, *Journal of Optimization Theory and Applications*, vol. 30, no. 1, pp. 19-32, January 1980.
23. “Agriculture and the Rest of the Economy: Macroconnections and Policy Restraints,” with L. Taylor, *American Journal of Agricultural Economics*, vol. 62, pp. 303-309, May 1980.
24. “North-South Interdependence, Development and Trade,” *IFDA Dossier*, no. 18, pp. 59-74, July/August 1980.
25. “Social Choice and the Topology of Spaces of Preferences,” *Advances in Mathematics*, vol. 37, no. 2, pp. 165-176, August 1980.
26. “Authoritarianism and Development: A Global Perspective,” with R. Falk and J. Serra, *IFDA Dossier*, no. 19, pp. 3-14, September/October 1980.
27. “Basic Goods, the Effects of Commodity Transfers and the International Economic Order,” *Journal of Development Economics*, vol. 7, pp. 505-519, December 1980.
28. “An Extension of Comparative Statics to a General Class of Optimal Choice Models,” with P. J. Kalman, *Journal of Mathematical Analysis and Applications*, 1980.
29. “Basic Needs and Global Models: Resources, Trade and Distribution,” *Alternatives*, vol. 6, pp. 453-472, 1980.
30. “Continuous Representation of Preferences,” *Review of Economic Studies*, vol. 47, pp. 959-963, 1980.
31. “Choix Sociaux et Theorie des Jeux: Resultats Recents d'une Approche Topologique,” *Cahiers du Seminaire d'Econometrie*, no. 23, pp. 47-75, 1981.
32. “Existence and Characterization of Optimal Growth Paths Including Models with Non-Convexities in Utilities and Technologies,” *Review of Economic Studies*, vol. 48, pp. 51-61, 1981.
33. “Existence of Optimal Savings Policies with Imperfect Information and Non- Convexities,” *Journal of Mathematical Economics*, vol. 8, pp. 1-14, 1981.



34. "Terms of Trade and Domestic Distribution: Export Led Growth with Abundant Labour," *Journal of Development Economics*, vol. 8, pp. 163-192, 1981.
35. "Some Results from a Model of Trade, Aid and the Development of the South," UNESCO, pp. 96-112, 1981.
36. "Social Aggregation Rules and Continuity," *Quarterly Journal of Economics*, pp. 337-352, May 1982.
37. "Trade and Development in the 1980s: Report to the Secretary General of UNCTAD," with G. Heal, United Nations, Geneva, November 1982.
38. "Structural Instability of Decisive Majority Rules," *Journal of Mathematical Economics*, vol. 9, pp. 207-221, 1982.
39. "The Topological Equivalence of the Pareto Condition and the Existence of a Dictator," *Journal of Mathematical Economics*, vol. 9, pp. 223-233, 1982.
40. "Basic Needs and the North/South Debate," World Order Models Project, Working Paper Number Twenty-One, pp. 1-37, 1982.
41. "Energy-Capital Substitution: A General Equilibrium Analysis," International Institute for Applied Systems Analysis, Working Paper CP-83-6, February 1983.
42. "Community Preferences and Social Choice," with G. Heal, *Journal of Mathematical Economics*, vol. 12, pp. 33-61, 1983.
43. "Social Choice and Game Theory: Recent Results with a Topological Approach," *Social Choice and Welfare* (Eds. P.K. Pattanaik and M. Salles), North Holland, chapter 6, pp. 79-102, 1983.
44. "The Transfer Problem with Three Agents Once Again: Characterization, Uniqueness and Stability," *Journal of Development Economics*, vol. 13, pp. 237- 248, 1983.
45. "Resources, Trade and Debt: The Case of Mexico," with G. Heal and D. McLeod, Global Analysis and Projections Division, The World Bank, Washington D.C., Division Working Paper No. 1984-5, pp. 10-34, September 1983.
46. "Necessary and Sufficient Conditions for a Resolution of the Social Choice Paradox," with G. Heal, *Journal of Economic Theory*, vol. 31, no. 1, pp. 68-87, October 1983.
47. "Non-Conflicting Resource Pricing Policies in an Interdependent World," *OPEC Review*, vol. VII, no. 4, pp. 330-356, 1983.
48. "The World of Oil Market, Past and Future," with G. Heal, *The Columbia Journal of World Business*, vol. XIX, no. 7, pp. 47-55, Spring, 1984.
49. "Competitive Equilibrium in Sobolev Spaces Without Bounds on Short Sales," with G. Heal, Institute for Mathematics and its Applications, University of Minnesota, Working Paper no. 79, June 1984.
50. "Necesidades Basicas, Recursos no Renovables y Crecimiento en el Contexto de las

- Relaciones Norte-Sur,” *Desarrollo Economico*, vol. 24, no. 94, pp. 171-186, July/September 1984.
51. “Agricultural Productivity and Trade: Argentina and the U.S.A.,” with D. McLeod, *Global Analysis and Projections Division*, The World Bank, Washington D.C., Division Working Paper No. 1984-5, pp. 1-57, October 1984.
  52. “North-South Trade and Export-Led Policies,” *Journal of Development Economics*, vol. 15, pp. 131-160, 1984.
  53. “Patterns of Power: Bargaining and Incentives in Two-Person Games,” with G. Heal, *Journal of Public Economics*, vol. 23, pp. 333-349, 1984.
  54. “Terms of Trade, Domestic Distribution and Export-Led Growth: A Rejoinder to Rejoinders,” *Journal of Development Economics*, vol. 15, pp. 177-184, 1984.
  55. “The Transfer Problem in Stable Markets: A Rejoinder to Rejoinders,” *Journal of Development Economics*, vol. 16, pp. 319-320, 1984.
  56. “Manipulations and Repeated Games in Futures Markets,” *The Industrial Organization of Futures Markets* (Ed. R. Anderson), D.C. Heath, Lexington, MA, pp. 193-214, 1984.
  57. “International Trade in Resources: A General Equilibrium Analysis,” *Environmental and Natural Resource Mathematics: Proceedings of Symposia in Applied Mathematics* (Ed. R. McElvey), American Mathematical Society (Short Course, Eugene, Oregon, 1984), Providence, RI, vol. 32, pp. 75-125, 1985.
  58. “Von Neuman - Morgenstern Utilities and Cardinal Preferences,” *Mathematics of Operations Research*, vol. 10, no. 4, pp. 633-641, November 1985.
  59. “Oil Prices and the Developing Countries: The Evidence of the Last Decade,” *Intereconomics*, vol. 20, no. 6, pp. 288-296, November/December, 1985.
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67. "Resources and North-South Trade: A Macro Analysis in Open Economies," *Challenges of South-South Cooperation* (Eds. H. Singer, N. Hatti, R. Tandon), Ashish Publishing House, New Delhi, India, pp. 263-290, 1988.
68. "Trade and Structural Change in Pacific Asia - Book Review," *Journal of Economic Literature*, vol. XXVII, no. 2, pp. 633-635, June 1989.
69. "North-South Trade and Basic Needs," *International Journal of Development Planning Literature*, vol. 4, no. 4, pp. 180-221, 1989.
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72. "An Alternative Vision," with G. Heal, *Global Custodian*, p. 103, September 1990.
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74. "North-South Trade and Basic Needs," *North South Trade in Manufactures: New World Order Series* (Eds. H. Singer, N. Hatti and R. Tandon), INDUS Publishing Co., New Delhi, India, vol. 7, chapter 25, part G, pp. 661-711, 1990.
75. "Global Models and North-South Relations," *International Political Science Review*, vol. 11, no. 2, pp. 177-185, 1990.
76. "The Opportunities in U.S.-Soviet Aid," *The New York Times: Op-Ed*, March 24, 1991.
77. "Setting standards: Letting 100 flowers bloom," with G. Heal, *Global Custodian: Communications Technology*, June/July 1991.
78. "The Wonder Years: New Communications Technology is Set to Alter the Way International Investors do Business," with G. Heal, *Global Custodian: Communications Technology*, pp. 90-93 & 142, June/July 1991.
79. "Social Choice and the Closed Convergence Topology," *Social Choice and Welfare*, vol. 8, pp. 307-317, 1991.
80. "Development at the Turn of this Century," *Adjustment and Liberalization in the Third World* (Eds. H. Singer, N. Hatti and R. Tandon), INDUS Publishing Co., New Delhi, India, chapter 6, part B, pp. 159-167, 1991.

81. "North-South Trade and Basic Needs," Theoretical Foundations of Development Planning (Ed. Shri Bhagwan Dahiya), Vedams Books International, New Dehli, India, vol. IV, 1991.
82. "Large and Small Models: Their Suitability for North-South Issues," Asian Journal of Economic and Social Studies, pp. 237-246, 1991.
83. "Market Innovation and the Global Environment," Columbia Journal of World Business, vol. XXVII, nos. III & IV, pp. 37-41, Fall/Winter, 1992.
84. "The Rain Drain," with G. Heal, Hermes Publishing, Columbia University School of Business, pp. 26-29, 1992.
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86. "A proposal for New York," The New York Times, January 2, 1993.
87. "On Strategic Control," Quarterly Journal of Economics, pp. 285-290, February 1993.
88. "How NAFTA Can Improve Trade," Journal of Commerce, Washington D.C., April 16, 1993.
89. "Traditional Comparative Advantages vs. Economies of Scale: NAFTA and GATT," Rivista Di Politica Economica, pp. 161-197, April 1993.
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91. "Sustainable Growth and the Green Golden Rule," with A. Beltratti and G. Heal, presented at conference on Sustainable Growth, Paris, May 1993.
92. "The Abatement of Carbon Emissions in Industrial and Developing Countries," presented at Organization for Economic Cooperation and Development (OECD) Conference on The Economics of Climate Change, June 14-16, 1993.
93. "Energy-Capital Substitution: A General Equilibrium Analysis," (Ed. G. Heal), Critical Writings in the Economics of Exhaustible Resources, Edward Elgar Publishing, chapter 17, pp. 339-90, 1993.
94. "Intersecting Families on Sets and the Topology of Cones in Economics," Bulletin of the American Mathematical Society, Expository and Research Papers, vol. 29, no. 2, pp. 189-207, October 1993.
95. "Global Environmental Risks," with G. Heal, Journal of Economic Perspectives: Special Issue on the Environment, vol. 7, no. 4, pp. 65-86, Fall, 1993.
96. "Property Rights on Biodiversity and the Pharmaceutical Industry," Case Study, Columbia Business School, Fall, 1993.
97. "International Trade in Resources: A General Equilibrium Analysis," The Economics of Exhaustible Resources (Ed. G. Heal), Edward Elgar Publishing, 1993.
98. "Topology and Economics: The Contribution of Stephen Smale," Topology to Computation, Proceedings of the Smalefest (Eds. M. Hirsch, J. Marsden and M. Shub), Springer-Verlag

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  105. “North-South Trade and the Global Environment,” *American Economic Review*, vol. 84, no. 4, pp. 851-874, September 1994.
  106. “Rejected: Leading Economists Ponder the Publication Process,” (Ed. George B. Sheperd, Foreword by K. Arrow), Thomas Horton and Daughters Publishing, chapter 55, pp. 56-66, November 1, 1994.
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  108. “Limited Arbitrage is Necessary and Sufficient for the Existence of a Competitive Equilibrium and the Core, and Limits Voting Cycles,” *Economics Letters*, vol. 46, pp. 321-331, December 1994.
  109. “North-South Trade, Property Rights and the Dynamics of Environmental Resources,” *The Environment after Rio: International Law and Economics* (Eds. L. Campiglio, L. Pineschi, D. Siniscalco and T. Treves), Graham and Trotman/Martinus Nijhoff Publishing, London, pp. 205-233, 1994.
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  112. “Traditional Comparative Advantage vs. Economies of Scale: NAFTA and the GATT,” *International Problems of Economic Interdependence* (Eds. M. Baldassarri, M. Di Matteo,



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  126. "Network Evolution and Coalition Formation," *Private Networks Public Objectives* (Eds. Eli M. Noam and Aine Ni Shuilleabhain), Elsevier Science B.V., Amsterdam, pp. 117-133, 1995.



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135. "The Future of Global Reinsurance," Presentation at the National Bureau of Economic Research Workshop on Public Policy and the Environment, Boston, August 1, 1996.
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