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**Dawn Cassandra Parker, Ph.D**

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## Education

PhD, Agricultural and Resource Economics, University of California at Davis, July 2000

Bachelor of Arts, Economics, Lewis and Clark College, Portland, Oregon, June 1992

## Academic Employment History

Assistant Professor, Department of Computational Social Science, George Mason University, 7/2007-.

Assistant Professor, Department of Environmental Science and Policy, George Mason University, 9/2006-6/2007.

Assistant Professor, Departments of Geography and Environmental Science and Policy, George Mason University, 1/2003-8/2006.

Post-doctoral Fellow in Modeling, Center for the Study of Institutions, Populations, and Environmental Change, Indiana University, 8/2000-12/2002; Elinor Ostrom, supervisor

## Journal Articles (\* denotes advisee/student author; cite counts (ISI:count/Google:count))

"Case studies, cross-site comparisons, and the challenge of generalization: Comparing agent-based models of land-use change in frontier regions" (2008) D.C. Parker, B. Entwisle, E. Moran, R. Rindfuss, L. Van Wey, S. Manson, L. Ahn, P. Deadman, T. Evans, M. Linderman, S. M. Mussavi\*, and G. Malanson. *Journal of Land Use Science* 3(1) 41-72. (ISI:0/Google:0)

"Land Use Change: Complexity and Comparisons" (2008) R.R. Rindfuss, B. Entwisle, S.J. Walsh, L. An, N. Badenoch, D.G. Brown, P. Deadman, T.P. Evans, J. Fox, J. Geoghegan, M. Gutmann, M. Kelly, M. Linderman, J. Liu, G.P. Malanson, C.F. Mena, J.P. Messina, D.C. Parker, D.T. Robinson, Y. Sawangdee, P. Verburg, and G. Zhong. *Journal of Land Use Science* 3(1) 1-10. (ISI:0/Google:0)

"Using the ODD protocol for comparing three agent-based social simulation models of land use change" (2008) J. G. Polhill, D.C. Parker, D. Brown, and V. Grimm. *Journal of Artificial Societies and Social Simulation* 11(2-3) *Proceedings issue of Model to Model 2007*. (ISI:0/Google:0)

"Complexity, Land-Use Modeling, and the Human Dimension: Fundamental Challenges for Mapping Unknown Outcome Spaces" (2008) D.C. Parker, A. Hessel, and S. C. Davis. *Geoforum* 39(2) 789-804. *Special issue "Biocomplexity in Coupled Human-Natural Systems: The Study of Population-Environment Interactions"*. (ISI:0/Google:1)

"Revealing 'Space' in Spatial Externalities: Edge-Effect Externalities and Spatial Incentives" (2007) D.C. Parker. *Journal of Environmental Economics and Management* 54(1) 84-99. (ISI:0/Google:1)

"Comparison of Empirical Methods for Building Agent-Based Models in Land-Use Science" (2007) D. Robinson, D. Brown, D.C. Parker, P. Schreinemachers, M. Janssen, M. Huigen, H. Wittmer, N. Gotts, P. Promburom, E. Irwin, T. Berger, F. Gatzwiller, and C. Barnaud. *Journal of Land-Use Science* 2(1) 31-55. (ISI:3/Google:0)

"The geography of market failure: Edge-effect externalities and the location and production patterns of organic farming" (2007) D.C. Parker and D. Munroe. *Ecological Economics* 60(4) 821-833. (ISI:5/Google:4)

"Measuring Pattern Outcomes in an Agent-Based Model of Edge-Effect Externalities Using Spatial Metrics"

(2004) D.C. Parker and V. Meretsky, *Agriculture, Ecosystems, and Environment* 101(2-3), 233-250. (ISI:31/Google:41)

“Multi-Agent Systems for the Simulation of Land Use and Land Cover Change: A Review” (2003) D.C. Parker, S. Manson, M. A. Janssen M. Hoffmann, and P. Deadman. *Annals of the Association of American Geographers*, 93(2), 314-337. (ISI:127/Google:198)

### Other Peer-Reviewed Publications

“Illustrating a new ‘conceptual design pattern’ for agent-based models of land use via five case studies—the MR POTATOHEAD framework” (2008) D. C. Parker, D. G. Brown, J. G. Polhill, P. J. Deadman, and S. M. Manson. In “Agent-Based Modelling in Natural Resource Management”, A. L. Paredes and C. H. Iglesias, eds, pp 29-62. Valladolid, Spain. (ISI:0/Google:3)

“Effects of land markets on competition between innovators and imitators in land use: results from FEARLUS-ELMM” (2008) J. G. Polhill, D. C. Parker, and N. Gotts. In “Social Simulation Technologies: Advances and New Discoveries”, C. Hernandez, K. Troitzsch and B. Edmonds, eds, pp 81-97. Information Science Reference, Hershey, PA. (ISI:0/Google:0)

“Agent-based modeling simulation of social adaptation and long-term change in Inner Asia” (2007) C. Cioffi-Revilla, S. Luke, D. C. Parker, J. D. Rogers, W. W. Fitzhugh, W. Honeychurch, B. Frohlich, P. DePriest, C. Amartuvshin. In “Advancing Social Simulation: The First World Congress” S. Takahashi, D. Sallach and J. Rouchier Eds. pp. 189-199. Springer, Tokyo. (ISI:0/Google:0)

“Integration of Geographic Information Systems and Agent-Based Models of Land Use: Challenges and Prospects” (2005) D.C. Parker. In “GIS, Spatial Analysis and Modeling,” D. Maguire, M. Goodchild and M Batty, Eds. pp. 403-422. ESRI press, Redlands, CA. Editor reviewed. (ISI:1/Google:5)

“Modeling Land-use/Land-cover Change: Exploring the Dynamics of Human-environment Relationships” (2005) T. Evans, D. Munroe, and D.C. Parker. In “Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystems,” E. Moran and E. Ostrom, Eds. pp 187-213. MIT press, Cambridge, MA. (ISI:5/Google:0)

“Meeting the Challenge of Complexity: Proceedings of the Special Workshop on Agent-Based Models of Land-Use/Land-Cover Change” (2002) CIPEC/CSISS joint publication. CIPEC Collaborative Report No. 3: D.C. Parker, T. Berger, and S. Manson, eds. (145 pages).

Chapters in “Meeting the Challenge of Complexity: “ABM/LUCC: Can we meet the challenge of complexity?,” (D.C. Parker, p. 4-5); “Potential strengths and appropriate roles for ABM/LUCC models,” (D.C. Parker, S. Manson, and T. Berger, p. 6-12); “Software Tools and Communication Issues,” (R. Najlis, M. Janssen, and D.C. Parker, p. 17-30); “Introduction to Specific Examples of Research,” (T. Berger and D.C. Parker, p. 37-44); “LUCIM: An Agent-Based Model of Rural Land-Owner Decision-Making in South-Central Indiana” (D.C. Parker, p. 72-77); “Synthesis and Discussion of Ongoing Research,” (D.C. Parker and T. Berger, p. 87-96).

“Agent-based Models of Land-Use/Land-Cover Change: Report and Review of An International Workshop” (2002) LUCC Report # 6: D.C. Parker, T. Berger, and S. Manson, eds. (124 pages)<sup>1</sup> (ISI:25/Google:67)

“Landscape Outcomes in a Model of Edge-Effect Externalities: A Computational Economics Approach” (1999) Santa Fe Institute Working Paper 99-07-051 E. Editor reviewed. (ISI:3/Google:7)

<sup>1</sup>This is a shorter version of the CIPEC/CSISS collaborative report

**Manuscripts under review (\* denotes advisee/student author)**

- “Power laws and rural land use simulations” N. Gotts and D.C. Parker. Submitted for publication in *Power laws in the social sciences: Discovering complexity and non-equilibrium dynamics in the social universe*,” C. Cioffi-Revilla, Ed. *Under review at Cambridge University Press.*
- “Exploring linkages between spatial externalities, landscape fragmentation, and economic welfare using agent-based modeling and pseudo-inductive analysis” D.C. Parker. *Under revision for Environment and Planning B.*
- “Analyzing Individual Behavior in Commons Dilemmas: A Study of Collective Action in Source Separation of Wastes” N. Kanbar\*, D.C. Parker, and T. Dietz. *Under revision for Human Ecology Review.*
- “A theoretical design for a bilateral agent-based land market with heterogeneous economic agents” D.C. Parker and T. Filatova\*. *Revised and resubmitted to Computers, Environment, and Urban Systems.*
- “Agent-Based Land Markets: Agents’ Pricing Behavior, Land Prices and Urban Land Use Change” T. Filatova\*, D.C. Parker, and A. van der Veen. *Accepted contingent on revisions; Journal of Artificial Societies and Social Simulation.*
- “HIV/AIDS, Diet, and Labor: Knowledge, Beliefs, and Practices in Southeastern Uganda” M. Komwa\*, K. Jacobsen, and D.C. Parker. *Submitted to AIDS and Behavior.*

**Peer-reviewed/Selected Conference Papers and Extended Abstracts**

- “Introducing Preference Heterogeneity into a Monocentric Urban Model: an Agent-Based Land Market Model” T. Filatova\*, A. van der Veen, and D.C. Parker. Presented at the 2nd World Congress on Social Simulation, Jul. 14-18, 2008, Fairfax, VA.
- “Agent-based land markets: heterogeneous agents, land prices and urban land use change” T. Filatova\*, D.C. Parker, and A. van der Veen. In “Proceedings of the 4th congress of the European Social Science Association (ESSA '07), Sept. 10-15, Toulouse, France,” F. Amblard, ed. pp. 263-75.
- “Using the ODD protocol for comparing three agent-based social simulation models of land use change” J. G. Polhill, D.C. Parker, D. Brown, and V. Grimm. Presented at Model to Model 2007, Marseilles, France, Mar. 15-16, 2007.
- “Agent-based dynamics of social complexity: Modeling Adaptive Behavior and Long-Term Change in Inner Asia” C. Cioffi-Revilla, S. Luke, D. C. Parker, J. D. Rogers, W. W. Fitzhugh, W. Honeychurch, B. Frohlich, P. DePriest, N. Bazarsad. Proceedings of NAACSOS 2006, Notre Dame, IN, USA, June 22-23, 2006.
- “Agent-Based Modeling to Explore Linkages Between Preferences for Open Space, Fragmentation at the Urban-Rural Fringe, and Economic Welfare.” D.C. Parker. Proceedings of the workshop “The role of open space and green amenities in the residential move from cities,” INRE, Dijon, France, Dec. 13-16, 2005.
- “Introducing Land Markets to an Agent Based Model of Land Use Change: A Design.” J. Gary. Polhill, D. C. Parker, and N. M. Gotts. 2005. Proceedings of ESSA 2005: Representing Social Reality, Koblenz-Landau University, Sept. 5-9, G. Troitzsch, ed pp. 150-157.
- “Size Distributions of Land Holdings in an Agent-based Model of Rural Land Use” N. M. Gotts and D. C. Parker. Proceedings of the Agent 2004 Conference on “Social Dynamics: Interaction, Reflexivity and Emergence,” Chicago, IL, Oct. 7-9, 2004. C. Macal, D. Sallach, and M. North, eds, pp. 615-632. Argonne National Laboratories, Chicago.
- “Modelling Size Distributions of Rural Land Holdings in Scotland” N. M. Gotts and D. C. Parker. Proceed-

ings of the Second Conference of the European Social Simulation Association, (ESSA 04), Valladolid, Spain, September 16-19, 2004.

“The Varied Impact of Greenways on Residential Property Values in a Metropolitan, Micropolitan, and Rural Area: The Case of the Catawba Regional Trail” D. K. Munroe, D. C. Parker, and H. S. Campbell Jr. Selected Paper, 2004 AAEA Annual Meeting, Denver, CO. August 1-4, 2004.

“Spatial Tests for Edge-Effect Externalities and External Scale Economies in California Certified Organic Agriculture” D. C. Parker and D. K. Munroe. Selected Paper, 2004 AAEA Annual Meeting, Denver, CO. August 1-4, 2004.

“Linking Local Spatial Externalities and Urban Sprawl: A Comparison of Two Agent-Based Cellular Automaton Modeling Approaches” D.C. Parker and G. Caruso. Presented at the North American Association for Computational Social and Organizational Science, Pittsburgh, PA June 22-25, 2003.

“Using multi-agent system models to link spatial externalities and landscape fragmentation: A ‘pseudo-inductive’ analysis” D.C. Parker and R. Najlis. Presented at the Framing Land Use Dynamics conference, Utrecht University, Netherlands, April 16-18, 2003.

“Measuring Emergent Properties of Agent-based Landuse / Landcover Models Using Spatial Metrics” D.C. Parker, T. Evans, and V. Meretsky. Seventh Annual Conference of the International Society for Computational Economics, June 28-29th, 2001, New Haven, CT.

“Hierarchical Attitude Formation and Perceptions of Food Risks: An Application to Consumer Perceptions of B.S.T. Treated Milk” D.C. Parker and D. Jolly. Selected paper, 2000 AAEA Annual Meetings, Tampa, Florida, July 30-August 2.

“Edge-Effect Externalities and Location Incentives: The Case of California Certified Organic Farmers” D.C. Parker. Selected paper, 2000 WAEA Annual Meetings, Vancouver, CA June 29-July 1.

“Economic Impacts of Edge Effects Externalities on Land Use Decisions” D.C. Parker. Selected paper, 1998 AAEA Annual Meetings, Salt Lake City, Utah August 2-5.

### Theses, Reports, Misc. Publications

“The effects of HIV/AIDS on household agricultural land productivity in southeastern Uganda” M. Komwa\* and D.C. Parker. (May, 2008) Research Brief 08-01-LEAP, Norman E. Borlaug Leadership Enhancement Program in Agriculture, UC Davis, Davis, CA.

“The interface between HIV/AIDS status, household nutrition, agricultural production, and household welfare in Uganda” D.C. Parker and M. Komwa\*. (Fall, 2007) *Global Studies Review*.

Contributor, chapter “Modelling land-use and land-cover change”, P. Verburg et al. In *Land-use and Land-cover Change: Local Processes, Global Impacts* (2006) E. Lambin and H. Geist, eds., Springer Berlin Heidelberg, New York.

Entries in *The Earth’s Changing Land: An Encyclopedia of Land-Use and Land-Cover Change* (2006) “Ecosystem Services” (p. 204-205), “Integrated Model” (p. 313-315), and “Tragedy of the Commons” (p. 600-601). H. Geist, ed., Greenwood Publishing Group, Westport, CT.

Review of “Pricing the Planet: Economic Analysis for Sustainable Development”, P.H. May and R. Serôa da Motta In *Land Degradation and Development*, 12: 87-92 (2001)

“A Special Workshop on Agent-Based Models of Land Use” (Dec. 2001) *LUCC Newsletter # 7*.

“Edge-Effect Externalities: Theoretical and Empirical Implications of Spatial Heterogeneity” (2000) *PhD.D dissertation, University of California, Davis* (<http://agecon.lib.umn.edu/cgi-bin/detailview.pl?paperid=2458>)

(ISI:7/Google:9)

“Dual Revenue Structures in Performing Arts Organizations” (1992) *Senior Thesis, Lewis and Clark College*

### Grants: PI or co-PI

National Science Foundation Grant 0813799 (Dynamics of Coupled Natural-Human Systems) “Collaborative Research: Spatial Land-Use Change and Ecological Effects (SLUCE): Interactions of Exurban Land Management and Carbon Dynamics” 9/2008-2/2013. D. Brown, (PI); W. Currie, J. Nas-sauer, S. Page, R. Riolo (Co-PIS) U. Michigan); D.C. Parker (PI), George Mason University. Award amount: \$1,496,359; GMU share: \$330,293.

National Science Foundation Grant BCS-0527471 (Human and Social Dynamics) “Agent-Based Dynamics of Social Complexity: Modeling Adaptive Behavior and Long-Term Change in Inner Asia” 1/2006-6/2009. C. Cioffi-Revilla, PI; D.C. Parker, S. Luke, J. D. Rogers, and W. Fitzhugh, co PIs. Award amount: \$749,809.00; GMU share: \$580,000.

Chesapeake Watershed Cooperative Ecosystem Studies Unit/National Park Service “Development of a spatially explicit participatory model to explore anthropogenic off-site threats on rare aquatic resources of the Potomac Gorge” 8/2005-12/2010. D.C. Parker, PI; S. Crate and R.C. Jones, co-Pis. Award amount: \$130,000.

Chesapeake Watershed Cooperative Ecosystem Studies Unit/National Park Service “Managing the impacts of surrounding land uses on the rare biotic resources of the Potomac Gorge” 8/2005-5/2006. D.C. Parker, PI; S. Crate, co-PI. Award amount: \$11,000.

National Science Foundation grant 0414565, “Collaborative Research: Land Use and Carbon Sequestration in Eastern Deciduous Forests: Complex Interactions Between Human Activities and Ecosystem Processes;” 8/2004-7/2008. (Geography and Regional Science, Ecosystems, and EPSCOR programs) A. Hessel (PI) , W. Peterjohn, and R. Thomas (Co-Pis), West Virginia University; D.C. Parker (PI), George Mason University. Award amount: \$355,087; GMU share: \$95,969.

Provost’s Summer Research Grant, George Mason University, 2004. Award amount: \$4,000.

Giannini Foundation Research Grant, “Evolution of Central Valley Organic Agricultural Landscapes,” 6/1999. Joint with J. Wilen and K. Klonsky. Award amount: \$10,000.

Public Interest Research Program Putah Bioregion Grant, “An Investigation of Spatial Configurations in Organic Agriculture,” 7/1998. Award amount: \$2,000 (approx)

Jastro-Shields Grant, “Spatial Mitigation of Edge Effect Externalities,” 7/1998. Award amount: \$4,500 (approx)

Giannini Foundation Research Grant, “Buffer Zones in Agriculture,” 6/1997. Joint with J. Wilen and K. Klonsky. Award amount: \$10,000.

### Additional Research Activities and Subcontracts

2/07-1/08 CIMMYT/Borlaug foundation LEAP fellowship to Macion Komwa “Exploring Cropping Choices and Their Impact on Land use in Uganda: Integrating Household Survey and GIS Data into a Simulation Model”

2/06-6/06 Collaborative Research Agreement “Agent-based modeling of sustainable resource use (Uganda),” with T. Berger, P. Schreinemachers, and M. Komwa.

5/05-8/05 Collaborator/Consultant, International Food Policy Research Institute “Uganda Strategic Criteria for Rural Investments in Productivity: Spatial analysis of production systems,” with M. Komwa, S. Wood, and T. Benson.

5/05-12/06 Steering Committee Member, NSF Research Coordination Network Grant: “Biodiversity Conservation in Dynamic Landscapes,” S. Andelman, PI.

8/04 - External consultant, NSF Biocomplexity Grant: “Large lake ecosystems: Modeling interactions

- among human, biological, and physical processes,” The Ohio State University, D. Culver, PI.  
 1/04- Collaborator, Macaulay Institute grant: “Comparative Agent-Based Modelling of Territorial Resource Allocation Processes” N. Gotts, Macaulay Institute (PI).  
 1/01 to 12/03: Senior Personnel, NSF Biocomplexity Grant: “Biocomplexity in Linked Bioecological-Human Systems: Agent-Based Models of Land Use Decisions and Emergent Land-Use Patterns,” Indiana University, E. Ostrom, Principal Investigator.  
 9/94-9/99: Research Assistantships, UC Davis, Professors J. E. Wilen, M. Weinberg, and D. Jolly  
 10/92-7/94: Research Assistant, Federal Reserve Board of Governors, Division of Research and Statistics, Financial Structures Section.

### Invited Seminars and Presentations

- “Agent-based land market models: Towards empirical models for participatory simulation, visualization, and decision support” Responsive City seminar series, Dept. of Urban Studies and Planning, Mass. Institute of Technology, April 16, 2008.
- “Modeling endogenous land rent formation via agent-based models of land markets: three progressively complex approaches” CASA, UCL (16 July 2007); University of Leeds Centre for Spatial Analysis and Policy (18 July 2007).
- “An Introduction to Agent-Based Models of Agricultural Land Use” Keynote presentation at GRoWE symposium on Agent Based Modeling of Spatially Distributed Systems, Kansas State University, Sept. 29, 2006.
- “Using agent-based modeling to derive hypotheses relating spatial externalities, landscape fragmentation, and economic welfare” Department of Environmental and Resource Economics Seminar Series, University of Rhode Island, Nov. 4, 2005.
- “Building the Endogenous Land Market Model (ELMM): Motivation, Choices, and Remaining Challenges” Economic Research Service, USDA, Washington, DC., Oct. 25, 2005.
- “Beyond SLUDGE: Better Acronyms, Better Markets” University of Michigan Complex Systems Advanced Academic Workshop, April 15, 2005.
- “Edge-effect externalities, external scale economies, and spatial clustering: Implications for the evolution of organic farming landscapes” Outstanding Academic Women in Resource Economics seminar series, Department of Environmental and Resource Economics, University of Rhode Island, March 21, 2005.
- “Edge-Effect Externalities and the evolution of complex land-use patterns at the urban-rural fringe” Joint Regional Research Institute and Geography Department Colloquium, West Virginia University, Oct. 8, 2004.
- “Multi-Agent System Models of Land-Use: What are they, Why use them, and What can we learn?” Tool Pool-GIS and spatial statistics seminar series, International Food Policy Research Institute, Washington, DC, August 24, 2004.
- “Spatial Tests for Edge-Effect Externalities and External Scale Economies in California Certified Organic Agriculture” Economic Research Service, USDA, Washington, DC., July 21, 2004.
- “Linking Land Market Activity to Urban Sprawl” George Mason University Computational Social Science Seminar Series, Fairfax, VA, March 25, 2004.
- “Linking Socioeconomic Behavior to Biophysical Processes via Agent-Based Models of Land Use” Environmental Studies Seminar Series, Washington and Lee University, Lexington, VA, Nov. 7, 2003.
- “Agent-Based Models of Land-Use/Land-cover Change: Background, Issues, and Prospects” University of

Rhode Island, Department of Environmental and Resource Economics, Nov. 2, 2001; University of Massachusetts, Amherst, Department of Resource Economics, Nov. 5, 2001.

### Invited Workshops and Research Consultations

Invited participant, Global Land Project nodal office on Integration and Modelling workshop “The design of integrative models of natural and social systems in land-use change” Aberdeen, Scotland, 27 Feb-2 March 2008. Presentation: “Can Agent-Based Models of Land Use Bridge the Gap between Process and Pattern Based Models?”

The Macaulay Institute 20-27 July, 2007, R. Aspinall, G. Polhill, and N. Gotts, hosts.

The Ohio State University May 31-June 1, 2007, E. Irwin and D. Munroe, hosts.

Invited participant, NSF/UK E-Social Science joint workshop “Agent-based Modeling of Complex Spatial Systems” M. Goodchild and M. Batty, PIs. Santa Barbara, CA. April 14-16, 2007. Presentation: “Grounding the debate about calibration and validation of spatial agent-based models: Simple questions about complex models.”

Invited participant, NSF HSD workshop “Integrating Socioecological Sciences Through a Community Modeling Framework” M. Barton, M. A. Janssen, and L. N. Alessa, PIs. Center for Social Dynamics and Complexity, ASU, Tempe, AZ, Mar. 1-3, 2007.

Invited Participant, NIH Roadmap Initiative workshop, “Population, Land Use Change, and Health in Frontier Regions” R. Rindfuss, B. Entwisle, and S. Walsh, organizers. East-West Center, Honolulu, HI, May 17-19, 2006.

Panelist, Symposium on Spatial Modeling Carolina Population Center, UNC Chapel Hill, Oct. 26, 2005. Presentation: “Capturing Complexity through Spatial Models.”

Co-organizer (with M. Huigen, D. Robinson, F. Gatzweiler, H. Wittmer, and T. Berger) Multi-Agent Modeling and Collaborative Planning - Method2Method Workshop. Pre-conference workshop: 6th Open Meeting of the IHDP, Bonn, Germany, Oct. 7-8, 2005.

Invited Participant: USGS Workshop on Developing a National Land-Cover Change Model Pingree Park, Colorado, Sept. 19-21, 2005.

Visiting Scholar Department of Environmental and Natural Resource Economics, University of Rhode Island. Sept. 2005-August 2006.

Externalities as a Justification for Government Intervention Liberty Fund Colloquium, Feb. 3-6, 2005.

Co-organizer (with Marco Huigen and T. Berger): Panel Discussion: Multi-Agent Models Held at the workshop Integrated Assessment of the Land Use System, Amsterdam, Netherlands Oct. 28-30, 2004.

FEARLUS project, Macaulay Land Use Research Institute Research consultation and attendance at the Workshop for Modelling Competition for Territory, July 1-9, 2004, Nick Gotts, host. Presentation: “The Role of Market Mechanisms in Agent-Based Models of Land Use.”

International Workshop on Power Laws in the Social Sciences Oct. 23-26, 2003, Center for Social Complexity, George Mason University, Claudio Cioffi, organizer.

ESRI workshop on modeling and GIS Sept. 25-26, 2003, Michael Batty, Michael Goodchild, and Ling Bian, organizers. Presentation: “Agent-Based Models of Land Use: Challenges for GIS Integration.”

SLUCE project, University of Michigan March 31, 2003, Dan Brown, host.

ZEF (Center for Development Studies,) Nov. 4-8, 2002, T. Berger, host.

Ohio State University Biocomplexity grant development Oct. 17-18, 2002, Elena Irwin, host.

Co-organizer (with M. Goodchild, W. McConnell, and B.L. Turner II): Special workshop on Agent-based Models of Land use Sponsored by the Center for Spatially Integrated Social Sciences, LUCC Focus 1, and CIPEC. Oct 4-7, Irvine, CA ([www.csiss.org/events/other/agent-based](http://www.csiss.org/events/other/agent-based)).

Invited Participant: Biocomplexity modeling workshop Sept. 10-12, 2001, The Ohio State University, Columbus, OH.

1998 Santa Fe Institute Graduate Workshop in Economics: Computational Modeling and Complexity in Economics.

### Conference Presentations (\* denotes presenter)

"Effects of foods on affected individuals living with HIV/AIDS in southeastern Uganda" M. Komwa\*, K. Jacobsen, and D.C. Parker. Presented at the American Association of Geographers Annual Meeting, Boston, MA, April 15-19, 2008.

"An OWL (Web Ontology Language) representation of the MR POTATOHEAD agent-based land-use change meta-model" D.C. Parker, J. G. Polhill, and S. M. Mussavi Rizi\*. Presented at the American Association of Geographers Annual Meeting, Boston, MA, April 15-19, 2008.

"Agent-based modeling of HIV/AIDS and land-use dynamics in Southeastern Uganda" D.C. Parker\*, M. Komwa, K. Jacobsen, T. Berger, and P. Schreinemachers Presented at the Transatlantic Land Use Conference, Sept. 24-26, Washington, DC.

"Exploring impacts of land-use change and residential land-management behavior on water quality in the Potomac Gorge, USA via participatory modeling" D.C. Parker\*, R. A. Brake, R. Albert, S. A. Crate, R. C. Jones, G. Mora-Bourgeois, and C. Nguyen. Presented at the Transatlantic Land Use Conference, Sept. 24-26, Washington, DC.

"Exploring the effects of morbidity and mortality from HIV/AIDS on household agricultural productivity in Southeastern Uganda using a multi-agent systems modeling approach " D.C. Parker\*, M. Komwa, T. Berger, and P. Schreinemachers. Presented at the 2007 Joint Annual Meetings of the AAEEA, WAEA, and CAEA, July 29-31, Portland, OR.

"Neighborhood externalities in a residential land market: a spatially explicit agent-based land market model (ALMA)" T. Filatova and D.C. Parker\*. Presented at the 2007 International Conference on Economic Science with Interacting Agents, June 17-19, 2007, Fairfax, VA.

"Development of a participatory model to explore impacts of land-use change and residential land-management behaviour on water quality in the Potomac Gorge, USA" D.C. Parker\*, R. A. Brake, R. Albert, S. A. Crate, R. C. Jones, G. Mora-Bourgeois, and C. Nguyen. Presented at the Framing Land Use Dynamics II conference, Utrecht, Netherlands, 18-20 April, 2007.

"Effects of mortality from HIV/AIDS on household agricultural land productivity in southeastern Uganda" M. Komwa\*, D.C. Parker, T. Berger, and P. Schreinemachers. Presented at the American Association of Geographers Annual Meeting, San Francisco, CA April 18-21 2007.

"Do Land Markets Matter? Preliminary Results from the Endogenous Land Market Model (ELMM)" D.C. Parker\*, J. G. Polhill, and N. Gotts. Presented in session "Geographic Perspectives on Complexity," American Association of Geographers Annual Meeting, Chicago, IL Mar. 7-11, 2006.

"The effects of HIV/AIDS on cropping decisions and their impact on land use and environment in Uganda: Integrating household survey and GIS data into an agent simulation model" M. Komwa\*, D.C. Parker,

- T. Benson, and S. Wood. Presented in session “Global AIDS,” American Association of Geographers Annual Meeting, Chicago, IL Mar. 7-11, 2006.
- “Eastern Deciduous Forests as Carbon Sinks: Interactions Between Ecosystems and Land Management” A. Hessel\*, S. Briden, S. Kazar, W. Peterjohn, R. Thomas, and D.C. Parker. American Association of Geographers Annual Meeting, Chicago, IL Mar. 7-11, 2006.
- “Linking socioeconomic drivers of timber harvest to carbon sequestration outcomes in Eastern United States deciduous forests” D.C. Parker\*, A. Hessel, W. Peterjohn, R. Thomas, M. Komwa, and S. Briden. 6th Open Meeting of the IHDP, Bonn, Germany, Oct. 9-13, 2005.
- “Exploring cropping choices and their impact on land use in Uganda: Integrating household survey and GIS data into an agent simulation model” M. Komwa\*, D.C. Parker, T. Benson, and S. Wood. 6th Open Meeting of the IHDP, Bonn, Germany, Oct. 9-13, 2005.
- “Individual rationality, institutional structure, and power-law distributions: Exploring the distribution of rural land-use holdings using FEARLUS” D.C. Parker\* and Nick Gotts. Presented in session “Geographic Perspectives on Complexity, American Association of Geographers Annual Meeting, Denver, CO April 5-9, 2005.
- “Edge-effect externalities, external scale economies, and spatial clustering: Implications for the evolution of organic farming landscapes” D.C. Parker\* and D. Munroe. Presented in the “Drivers of Land-Use Change: Linking Pattern and Process” session in the workshop Integrated Assessment of the Land Use System: The Future of Land Use, Amsterdam, Netherlands Oct. 28-30, 2004.
- “The ALMM Model: Linking Land Market Activity to Urban Sprawl” D.C. Parker. Presented in session “Geographic Perspectives on Complexity, American Association of Geographers Annual Meeting, Philadelphia, PA March 14-19, 2004.
- “Multi-Agent System Modeling of Spatial Dynamics in SocioEconomic and Environmental Systems” T. Berger\* and D.C. Parker. Framing Land Use Dynamics conference, Utrecht University, Netherlands, April 16-18, 2003.
- “Agent-Based Computational Models Applied to Land-Use/Land-Cover Change: Recent Work, Remaining Challenges, and Future Directions” T. Berger\* and D.C. Parker. In Organized Symposium, “New Techniques for Land-Use Modeling,” Elena Irwin and D.C. Parker, co-organizers, 2002 AAEA Annual Meetings, Long Beach, CA, July 28-31.
- “Multi-Agent Modeling of Interlinked Socioeconomic and Biophysical Processes at Multiple Spatial Scales” D.C. Parker\* and T. Berger. Second World Congress of Environmental and Resource Economists, 2002 AAEA Annual Meetings, Monterey, CA, June 24-27, 2002.
- “Empirical Tests Based on Emergent Landscape Properties: Linking Multi-Agent Systems to Data” D.C. Parker\* and V. Meretsky. Presented in session *Geographical Perspectives on Complexity Theory and Complex Systems I*, American Association of Geographers Annual Meeting, Los Angeles, CA, March 19-23, 2002.
- “Validating Spatially-Explicit, Predictive Land-Cover Models – How Does the Question Shape the Method?” V. Meretsky\*, T. P. Evans, and D.C. Parker. Presented in *Spatial Ecology: Models and Methods*, Conference of the Ecological Society of America Annual Meeting, August 5-10, 2001, Madison, WI.
- “Observing Landscape Processes and Outcomes” V. Meretsky\*, T. P. Evans, D.C. Parker, and C. Croissant. Presented in *Pattern, process, scale, and hierarchy: interactions in human-dominated and natural landscapes*, 16th annual symposium of the International Association of Landscape Ecology - U.S. Chapter. April 25-29, 2001, Phoenix, AZ.

“An Agent-based Model of Parcel-level Landcover Change in Southern Indiana” Tom P. Evans\*, Matt Hoffmann, Hugh Kelly, and D.C. Parker. American Association of Geographers Annual Meeting, New York, New York, Feb.27-March 3, 2001.

“Location and Production Patterns of Certified Organic Farmers: Individual Incentives and Spatial Clustering” D.C. Parker. American Association of Geographers Annual Meeting, New York, New York, Feb.27-March 3, 2001.

“Empirical Tests for Landscape Impacts of Edge-Effect Externalities in Organic Agriculture” D.C. Parker. Short paper, Fourth Occasional California Workshop on Environmental and Resource Economics, Oct. 16-18, 1998, Santa Barbara, CA.

### Professional Activities and Service

Guest editor, Special Issue on Agent-based Computational Economics Canadian Journal of Agricultural Economics (Scheduled for 2009 publication).

Scientific Steering Committee, Global Land Project Jan., 2008-

Judge, Spatial Analysis and Modeling specialty group graduate student paper competition Association of American Geographer’s Annual Meeting, April 17, 2008.

Reviewer, Chesapeake Bay STAC Watershed Land Use/Land Cover Technical Review and Comment June, 2006; May, 2008.

Program Committee First (2006) World Congresses on Social Simulation; Program Committee, Local organizing committee and poster session coordinator Second WCSS (2008).

Editorial Board *Journal of Land Use Science; Computers, Environment, and Urban Systems*

Grant Reviewer: *California Energy Commission PIEREA grant program; Maine Sea Grant program; National Science Foundation Review Panel Member (2003); NSF grant reviewer (2005); University of Hawaii Pelagic Fisheries Research program; Ohio State University; Swiss Federal Institute of Technology; Wageningen University PE&RC.*

Publication Reviewer: *Agricultural Economics; Agriculture, Ecosystems, and Environment; American Agricultural Economics Association Annual Meetings; American Journal of Agricultural Economics; Annals of the Association of American Geographers, “Complexity and Ecosystem Management: The Theory and Practice of Multi-Agent Approaches” (Marco A. Janssen, editor); Computers, Environment, and Urban Systems; Ecological Applications; Ecological Economics; Ecological Modelling; Ecology and Society; Environment and Planning B; Environmental Modelling and Software; Geographical Analysis; GeoJournal; International Journal of GIS; Journal of Artificial Societies and Social Simulation; Journal of Environmental Economics and Management; Journal of Land Use Science; Landscape and Urban Planning; Landscape Ecology; Land-Use Policy; Professional Geographer; Proceedings of the National Academy of Sciences, Resources for the Future Press; Review of Agricultural Economics, Sociological Methods and Research; World Development.*

Member: American Agricultural Economics Association; Association of Environmental and Resource Economists; Association of American Geographers.

Developer, MAS/LUCC resource site Hosted by CSISS at <http://www.csiss.org/resources/maslucc>.

Co-founder, MaSpace (Multi-agent system models of spatial human-environment interactions) electronic mailing list: <https://listserv.indiana.edu/cgi-bin/wa-iub.exe?A0=MASPACE-L>.

**George Mason University Departmental and University Service**

Departmental coordinator, SACS accreditation review, Department of Computational Social Science, 1/2008-  
 Associate director, Computational Social Science PhD program, 9/2007-  
 Acting director, Computational Social Science PhD program, 11/2006-8/2007  
 Dept. of ESP Chair's Advisory Committee Policy/Social Science representative, fall 2006  
 Dept. of ESP seminar committee, 2006-2007  
 Dept. of Geography Assistant Professor search, spring 2005  
 Organizer, early career scholars coffee hour, fall 2004  
 Center for Social Complexity representative, GIS center advisory committee, fall 2004-  
 Computational Social Sciences PhD Graduate Studies Committee, fall 2004-  
 Dept. of Geography Assistant Professor search, winter 2004  
 Dept. of Geography Chair search, 2003-2004  
 Geospatial classroom development committee, summer 2004  
 Dept. of Environmental Science and Policy Environmental Policy Assistant Professor search, Fall 2003  
 Dept. of Environmental Science and Policy Environmental Policy Term Faculty search, Summer 2003  
 Dept. of Geography Assistant Professor search, winter 2003  
 Dept. of Geography GIS Center Director search, winter 2003

**Teaching and Outreach Activities**

Fall 2007 George Mason University Ecological Economics (Undergraduate geography/environment science and policy)  
 Fall 2004; Spring 2007, George Mason University Spatial agent-based models of human/environment interactions (Graduate computational social science/geography/environment science and policy class)  
 Spring 2004,2005; Fall 2008, George Mason University Economics of human-environment interactions (Graduate geography/environment science and policy class)  
 Fall 2003,2004,2006; Spring 2008, George Mason University Introduction to environmental and resource economics (Graduate geography/environment science and policy class)  
 Spring 2003,2004,2005; Fall 2006,2007,2008 George Mason University Land-use modeling techniques and applications (Graduate geography/environment science and policy/computational social science class)  
 11/2007, WISDOM (Women in Science DOMains) presentation "Investigating the effects of HIV/AIDS on agricultural production and household livelihoods in Southeastern Uganda using agent-based modeling," George Mason University.  
 2005/2006, ESRI International Users Conference "Spatial Analysis and Modeling" pre-conference workshop (with Mike Goodchild and Dan Brown)  
 4/2004: "A virtual tour of Fairfax City using GIS (Geographic Information Systems)" Hands-on workshop at the Sally Ride science fair for girls, George Mason University.  
 5/2003: "Complexity theory as a tool for linking pattern and process in urban landscapes" Presentation at the Thomas Jefferson High School for Science and Technology, Fairfax, VA.  
 11/2002: "A Theoretical Overview of Agent-Based Models of Land-Use Change" *Invited presentation and lab session at the LUCC IPO advanced study course on modeling land-use change, Oct. 27-Nov. 02, 2002, University of Louvain, Department of Geography, Louvain-La-Neuve, Belgium.*  
 3/2000: "Expanding Your Horizons" Conducted experimental market auctions with junior high school

girls interested in careers in math and science.

1/96-3/2000: Teaching assistant, Department of Ag and Resource Economics, U.C. Davis Finance, Intermediate Microeconomics, Environmental and Resource Economics, and Linear Programming.

### **Thesis Committee Service**

External reviewer, MS thesis, Jennifer Whalen, MA, Geography Department, Memorial University of Newfoundland (2005)

Ryan Albert, Environmental Science and Policy (PhD, May 2007)

Chris Branigan, Environmental Science and Policy (MS, May 2007)

Jack Blevins, Environmental Science and Policy (PhD, ongoing)

Robin Brake, Environmental Science and Policy (PhD, ongoing)

Amy Duray, Environmental Science and Policy (MS, ongoing)

Aaron Frank, Computational Social Science (PhD, ongoing)

Herlitz Davis, Environmental Science and Policy (PhD, ongoing)

Robert Fine, Environmental Science and Policy (PhD, ongoing)

Joshua Daniel Fisher, Institute of Conflict Resolution and Analysis (PhD, ongoing)

Tatiana Filatova, University of Twente (PhD, ongoing; A. Van der Veen, adviser)

Beaudry Kock, MIT (PhD, ongoing; M. Flaxman, adviser)

### **Graduate Advisees**

Sara O'Connell, Environmental Science and Policy (MS, May, 2005. Project title "An Evaluation of the Environmental Effectiveness of ENERGY STAR for Buildings.")

Brandy Holstein, Environmental Science and Policy (MS, ongoing)

Nancy Nabil Kanbar, Environmental Science and Policy (PhD; co-chair with Dr. Tom Dietz. PhD Dec. 2005. Thesis title "Analyzing Individual Behavior in Commons Dilemmas: A Study of Collective Action in Source Separation of Wastes.")

Maction Komwa, Environmental Science and Policy (PhD, ongoing)

Shawn Bucholtz, Computational Social Science (PhD, ongoing)

Lesley Milheim, Earth Systems and Geoinformation Science (PhD, ongoing)

Atesmachew Hailegiorgis, Computational Social Science (PhD, ongoing)