

DEREK T. ROBINSON

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EDUCATION

Ph.D University of Michigan, School of Natural Resources and Environment 2003-2008.
Specialization: Resource Ecology and Management, Certificate of Graduate Studies in Complex Systems,
Michigan Teaching Fellow Certificate.
Thesis: Land-Use Policy and Adjacency Effects on Ecosystem Function.
Advisor: Dr. Daniel Brown

MES University of Waterloo, Geography, 2001-2003.
Specialization: Geomatics.
Thesis: Modelling Farmer Household Decision Making and its Effects on Land Use/Cover Change in the
Altamira Region, Para, Brazil.
Advisor: Dr. Peter Deadman

BES (Honours Co-op) University of Waterloo, Geography, 1996-2001.
Minor: Economics
Specialization: Info.Technologies, Certificate of Excellence in GIS.
Honours Thesis: Campground Management Facilitated by Geographical Information Systems and Visual Basic.
Advisor: Dr. Peter Deadman

HONOURS, AWARDS, & COMPETITIVE FELLOWSHIPS

2008	Terrestrial Ecosystem Faculty Award, faculty elected student for outstanding scholarship, UM.	
	American Association of Geographer's GIS Specialty Group Student Paper Competition, 2 nd Place	\$750
2007	Graham Environmental Sustainability Institute (GESI) Fellow, UM.	\$50,000
	AAAS/Science Program for Excellence in Science Award.	
2006	National Science & Engineering Research Council of Canada (NSERC) PGS-D	\$42,000
	Dissertation Research Grant, American Association of Geographers	\$400
	Doctoral Research Grant, SNRE, UM.	\$300
	Rackham Discretionary Candidate Award, UM.	\$2,500
2005	Rackham Interdisciplinary Workshop Grant, UM.	\$6,000
	Rackham Discretionary Pre-Candidate Award, UM.	\$1,500
	Doctoral Research Grant, SNRE, UM.	\$300
	Travel Grants, SNRE, Rackham, UM, 2005-2007.	\$2,200
2003	Recruitment Scholarship, SNRE, UM.	\$10,000
	Lorne Russwurm Excellence in Teaching Award, Dept. of Geog., University of Waterloo.	

REFEREED PUBLICATIONS

- In Prep 2008. **Robinson, D.T.**, Taylor, J., and D.G. Brown. Changes in land use and land cover in Southeast Michigan USA. *Landscape Ecology*.
- In Prep 2008. **Robinson, D.T.** and D.G. Brown. Coupling GIS and agent-based models. *Environmental modelling and Software*.
- In Prep 2008. Agrawal, A., Brown, D.G., Rao, G., Riolo, R., and **D.T. Robinson**. Examining Differences in the Effects of Institutional rules vs. Norms in Natural Resource Governance by households. *Proceedings of the National Academy of Sciences*.

- In Prep 2008. **Robinson, D.T.**, Brown, D.G., and W. Currie. Modelling carbon storage in highly fragmented and human dominated landscapes: linking land-cover patterns and ecosystem models. *Ecological Modelling*.
- Accepted 2008. **Robinson, D.T.** and D.G. Brown, Evaluating the effects of land-use development policies on ex-urban forest cover: an integrated agent-based GIS approach. *International Journal of Geographical Information Science*.
- In Press. Zellner M.L., Page S.E., Rand W., Brown D.G., **Robinson D.T.**, Nassauer J., and B. Low. The emergence of zoning policy games in exurban jurisdictions. *Land Use Policy*.
2008. Rindfuss, R.R., Entwistle B., Walsh, S.J., An, L., Badenoch, N., Brown, D.G., Deadman, P., Evans, T.P., Fox, J., Geoghegan, J., Gutman, M., Kelly, M., Linderman, M., Liu, J., Malanson, G.P., Mena, C.F., Messina, J.P., **Robinson, D.T.**, Sawangdee, Y., Verburg, P., Zong, G., Land use change: complexity and comparisons. *Journal of Land Use Science* 3(1): 1-10.
2008. Brown D.G., **Robinson D.T.**, Nassauer J.I., An L., Page S.E., Low B., Rand W., Zellner M., and R. Riolo. Exurbia from the Bottom-Up: Agent-Based Modeling and Empirical Requirements. *Geoforum* 39: 805-818.
2007. **Robinson D.T.**, Brown D.G., Parker D.C., Schreinemachers P., Janssen M.A., Huigen M., Wittmer H., Gotts N., Promburom P., Irwin E., Berger T., Gatzweiler F., and C. Barnaud. Comparison of Empirical Methods for Building Agent-Based Models in Land Use Science. *Journal of Land Use Science* 2(1): 31-55.
2006. Brown, D. G. and **D. T. Robinson**. Effects of Heterogeneity in Residential Preferences on an Agent-Based Model of Urban Sprawl. *Ecology and Society* 11(1): 46. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art46/>
2005. Brown D., Riolo R., **Robinson D.T.**, North M., and W. Rand. Spatial Process and Data Models: Toward Integration of Agent-Based Models and GIS. *Journal of Geographical Systems* (7)1: 25-47.
2004. Deadman, P. J., **Robinson, D.T.**, Moran, E., and E. Brondizio. Colonist household decision-making and land-use change in the Amazon Rainforest: an agent-based simulation. *Environment and Planning B: Planning and Design* (31)5: 693 – 709.

CONFERENCE PAPERS, POSTERS, & PRESENTATIONS

2008. **Robinson, D.T.** and D.G. Brown – *Development of a GIS-based ABM as a platform to evaluate ecological land-use development policies*. To be presented at Association of American Geographers Annual Conference, Boston, MA, April 15-19.
- Brown, D.G., **Robinson, D.T.**, Taylor, J.T., Nassauer, J.I., Page, S.E., and R.L.Riolo – *Human Agents and Landscape Ecological Function at the Urban-Rural Fringe*. To be presented at U.S. Chapter of the International Association for Landscape Ecology Conference, Madison, Wisconsin, April 6-10.
2007. **Robinson, D.T.** and D.G. Brown – *Evaluation of Publicly versus Privately Directed Land-Use Policies using a GIS-Centric ABM*. Presented at Framing Land Use Dynamics II, Utrecht, Netherlands, April 18-20.
2006. **Robinson, D.T.**, Brown D.G., and W.S. Currie - *Linking Ecosystem and Land-Use Process Models: A Way Forward*. Presented at Association of American Geographers Annual Conference Chicago, IL, Mar. 7-11.
2005. Rand, W., Brown D., Riolo, R., and **D. Robinson** – *Toward a Graphical ABM Toolkit with GIS Integration*. Proceedings of Agent 2005, Chicago, IL, Oct. 13-15. <http://agent2003.anl.gov/proc2005.html>
- Robinson, D.T.** - *Identification and use of Land-Use Modelling Primitives 'LUMPS'*. Presented at the Method2Method Workshop on Multi-Agent Modeling and Collaborative Planning, Bonn, Germany Oct. 8-9.

Robinson, D.T. - *Modeling Urban Growth Using Eulerian & Lagrangian Perspectives*, Presented at the Summer Institute on Agent-based Modeling and Natural Resources. Indiana University, Center for the study of Institutions, Populations and Environmental Change (CIPEC), Bloomington, IN, June 2-4.

Robinson, D.T. et al. - *Mapping Heterogeneity Levels & Neighbourhood Similarity in an Urban ABM*. Presented at Association of American Geographers Annual Conference, Denver, CO, April 5-9.

2004. Shepardson, B.L. and **D.T. Robinson** - *Land Use and Resource Management in an Agent-Based Commons Model*. Proceedings of the Santa Fe Institute's Complex Systems Summer School, Santa Fe, NM, June 6 – July 2.

Robinson, D.T. - *Site Evaluation and Cultural Influence Extensions to a Residential Location Model*. Presented at SWARMFEST, University of Michigan, Ann Arbor, MI, May 9-11.

2003. Deadman, P.J. and **D.T. Robinson** - *Linking Multi-Agent Systems and Geographic Information Systems for Land Use Land Cover Change Modelling: A Case Study from the Brazilian Amazon*. Presented at Canadian Association of Geographers Annual Meeting, Toronto, ON, May 28 – June 1.

Deadman, P.J. and **D.T. Robinson** - *Framing Land Use Dynamics: Exploring Theories of Land Use Change through Agent-based Simulation*. Presented at Framing Land Use Dynamics, Utrecht, Netherlands, April 16-18.

Robinson, D.T. and P. Deadman - *Agent Based Modeling of Household Decision Making in the Brazilian Trans-Amazon Frontier*. Presented at Association of American Geographers Annual Conference, New Orleans, LA, March 5-8.

2002. Deadman, P. J., Lim, K., **Robinson, D.**, Moran, E. and McCracken, S. *LUCITA: Multi-Agent Simulations of Land-Use Change near Altamira, Brazil*. in Agent-Based Models of Land-Use and Land-Cover Change. LUCC Report Series No. 6. (Eds) D. C. Parker, T. Berger and S. Manson. Irvine, California, USA, October 4-7, 2001.

2001. **Robinson, D.T.** - *Private Campground Management Facilitated By GIS and VB*. Presented at Canadian Association of Geographers Ontario Division Meeting, Carleton University, Ottawa, ON, Oct. 26.

PUBLISHED EXTENDED ABSTRACTS

2005. **Robinson, D.T.** and D.G. Brown. Comparison of Eulerian & Lagrangian Models for Representing a Landuse Change Process. GeoComputation 2005, University of Michigan, Ann Arbor, MI, USA, August 1-3.

2004. Daniel G. Brown, Rick Riolo, **Derek T. Robinson**, William Rand, Michael North, and Kevin Johnston. Toward Integration of Spatial Data Models and Agent-Based Process Models. In Proceedings of the 3rd International Conference on GIScience, abstracts volume. Adelphi, MD, USA, October 20-23.

WORKSHOPS & INSTITUTES

2008. "Land use and climate" NSF and DFG workshop, invited participant and organizational committee. Berlin.

2006. "Land-Use and Land-Cover Change" NIH-funded roadmap workshop, invited participant. East-West Center, Honolulu, HI.

2005. Summer Institute on Agent-based Modeling and Natural Resources. Held at Indiana University by Center for the study of Institutions, Populations and Environmental Change (CIPEC) and instructed by Marco Janssen and Francois Bousquet. Bloomington, IN, May 16 to June 4.

2004. Santa Fe Institute Complex Systems Summer School Program. Personal focus on modelling human-environment interactions through land-use and local climate change, as well as, tragedy of the commons dilemma. June 6 – July 2.

INVITED/GUEST LECTURES

2008/06/16 “Agent-based modelling our way toward improved evaluations of land use policy”. Presented to the School of Planning and Faculty of Environmental Studies, University of Waterloo, ON, Canada.

2007/02/16 “A Review of GIS & ABM Integration: What Lies Ahead.” Presented in Geography 506: Advanced Geo-Information Systems, McGill University, Montreal, Quebec, Canada.

2007/01/18 “Introduction to Agent-Based Modelling and GIS-ABM Integration” Ann Arbor GIS professionals monthly meeting. URL: <http://a2gis.blogspot.com/>

TEACHING EXPERIENCE

Michigan Teaching Fellow Certificate, 2007

Completion of a 5 week teaching seminar with topics including preparation for the academic job search, information about higher education, effective and reflective teaching, multicultural teaching and learning, use of instructional technology, and trips to local college campuses.

University of Michigan, Principles in GIS, Jan.- April 2005

Instruction, assistance, grading, and course-work creation for a comprehensive range of techniques and applications of GIS concepts.

Beijing – University of Waterloo, China GIS Training Project, July 2001 – August 2002

Two week intensive GIS Training in Beijing - April 2002

Twice conducted two month intensive GIS Training in Waterloo, ON.

Conducted lab training for three university level GIS courses.

Assisted instruction of GIS and Remote Sensing Theory, and created lab modules for assignment purposes.

University of Waterloo

Teaching Assistant, Sept. 2001 – Dec. 2002

Instruction, assistance, grading, and course-work creation related to advanced and introductory GIS courses: GIS Application Development, Introductory GIS Methods, and Advanced GIS Methods.

Recipient of the Lorne Russworm Excellence in Teaching award.

Workshops – I have participated in ~13 Teaching workshops, additional information is available upon request. (See *Teaching* Section of Website)

RESEARCH EXPERIENCE

PHESI (Program in Human and Environmental Systems Interactions), University of Michigan.

School of Natural Resources and Environment, 2007.

- NSF Human and Social Dynamics (BCS-0527318)

- In the process of coauthoring 1 publication.

- Created an agent-based model to investigate the influence of formal and informal institutional structures on household behaviour and subsequent forest resource consumption and dynamics in a common pool resource system in India.

ESRI (Environmental Systems Research Institute)/Argonne National Laboratory/University of Michigan, Aug. 2004 – Aug. 2005

- Coauthored publications (1), conference proceedings (1), conference presentations (2)

- Provided technical and design input on Agent Analyst a product to link agent-based modelling and GIS.

- Debugged prototypes and implemented sample models. Assisted in developing theoretical primitives for linking, building, and developing agent-based simulation models in a GIS.

SLUCE (Spatial Land Use Change and Ecological Effects) University of Michigan, School of Natural Resources and Environment, Sept. 2003 – Dec. 2006

- NSF Biocomplexity in the Environment Program (BCS-0119804) project
- Coauthored publications (3), conference presentations (4), (<http://www.cscs.umich.edu/sluc/>)
- Development and extension of agent-based models, computational experiments, and website maintenance.
- Modelled dynamics driving urban and rural residential settlement patterns and more generally land use/cover change, and integrated geographical information systems and agent-based models.

LUCITA (Land Use Change in The Amazon), University of Waterloo & Indiana University, 2001-2003

- NSF Biocomplexity in the Environment Program (SES00835)
- Coauthored publication (1), report publication (1), conference presentations (3)
- Created an ABM to computationally formalize a conceptual model of the effects of household demographic and structure changes on deforestation along the trans-Amazon highway in Para, Brazil.
- Compared model results to remotely sensed data on deforestation from 1970-2000.

ACADEMIC SERVICE

Co-organiser of the Method2Method Workshop on Multi-Agent Modeling and Collaborative Planning, Bonn, Germany Oct. 8-9 2005.

The workshop had two goals, 1) improve our understanding of the uses and limitations of combining empirical data from different data collection techniques with agent-based models, and 2) critically discuss the possibility, uses, and types of land-use modelling primitives and model sharing techniques to increase model building efficiency, understanding, and sharing.

Coordinator of Complex Systems Advanced Academic Workshop (CSAAW) 2005-2006, Center for the Study of Complex Systems, University of Michigan.

The focus of the CSAAW group was to facilitate interdisciplinary collaboration and learning by Ph.D. students using the themes of Complexity Science. Coordinators led and organized bi-monthly meetings that incorporated student presentations, invited speakers, modelling tutorials, topic oriented discussions and luncheons, maintained an online collaborative working tool, and obtained funding for the group.

Elected Student Government Ph.D. Representative – 2004-2005, School of Natural Resources and Environment, University of Michigan

The government facilitated discussion, in weekly meetings, of student issues that required change or needed to be brought forward to the administration. The government obtained funding from campus agencies and hosted a number of community building events as well as reviewed and awarded individual student funding requests.

Reviewed for: *Computers, Environment and Urban Systems (1)*, *Conservation Biology (1)*, *Ecology and Society (2)*, *Environmental Modelling and Software (1)*, and *International Journal of Geographical Information Systems (1)*.

MEMBERSHIPS

Canadian Association of Geographers (CAG) 2003, 2007
American Association of Geographers (AAG) 2003 – present
American Association for the Advancement of Science (AAAS) 2007
Ontario Professional Planners Institute (OPPI) – Student member 2008
Canadian Institute of Planners (CIP) – Student member 2008

WORK EXPERIENCE

- Blue Mountains City Council, Environmental Management Branch, Operations, Katoomba, NSW, Australia, Sept. 2000.
- Dept. of Fisheries and Oceans, Canadian Hydrographic Division, Navigational Information, Burlington, ON, May 1999.
- Finance Canada, Tax Policy Branch, Ottawa, ON, 1998.