List of Contributors

Hussein Abbass obtained his PhD from the Queensland University of Technology, Australia. He is an Associate Professor at the School of Information Technology and Electrical Engineering, University of New South Wales (UNSW), Canberra. His current research interests are in complex adaptive systems, data mining, multi-agent systems, and multi-criteria decision making. He has authored/co-authored more than 120 fully refereed papers.

Gabriele Bammer is a Professor at the National Centre for Epidemiology and Population Health at The Australian National University (ANU) and a Research Fellow at the Hauser Center for Nonprofit Organisations at Harvard University. Her main interest is in effective ways of bringing different disciplinary and practice perspectives together to tackle major social issues. She is seeking to develop more formal processes for doing this by establishing a new specialisation: Integration and Implementation Sciences.

Michael Barlow (who prefers to be called Spike) is a senior lecturer in the School of Information Technology and Electrical Engineering, UNSW at the Australian Defence Force Academy (ADFA). He is also the Deputy Director of the UNSW Security and Defence Applications Research Centre, and Director of the Virtual Environments and Simulation Lab at ADFA. Spike's research areas include multi-agent systems, Commercial Off-The-Shelf games (COTS), scientific visualisation, virtual environments, and speech processing.

David Batten holds a PhD in Economics from Sweden and is an Adjunct Research Fellow with the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Following 16 years at the CSIRO, in 1986 he moved to a Chair in Infrastructure Economics in Sweden. From 1991–95, he also held the position of Professorial Fellow at the Institute for Futures Studies, a scientific think tank in Stockholm. His work there focused on co-evolutionary learning across complex infrastructure systems—transport, energy, water and urban planning. In 2002, he was invited to return to the CSIRO and is currently involved in projects funded by CSIRO's Centre for Complex Systems Science and COSNet (the ARC's Complex Open Systems Network). Until recently, he led the Energy Flagship's NEMSIM Project, a multi-agent-based simulation model that represents Australia's National Electricity Market (NEM) as a co-evolving system of complex interactions between NEM participants and their effects on technical infrastructures and the natural environment. He also coordinates CSIRO's Agent-Based Modelling Working Group and COSNet Theme 5: Cellular Automata, Agent-Based Modelling and Simulation.

Roger Bradbury is a Professor in the Resource Management in Asia-Pacific Program at the ANU. A zoologist by training, he has worked extensively on the

analysis of coral reefs and other complex systems, ranging from natural resources to infrastructure to national security systems.

Neville Curtis obtained his PhD in Chemistry from the University of Alberta in 1981. He joined the Defence Science and Technology Organisation in 1984 and has worked in the areas of Energetic Materials, Weapons Systems and Military Operations Research. His current research interests are in concept exploration and development studies, and problem structuring methods ('soft OR'). He has authored over 100 publications in a wide variety of areas.

Katherine Daniell is currently completing a PhD in water resources management and sustainable development under a cotutelle program between the Centre for Resource and Environmental Studies, ANU, and Ecole du Génie Rural des Eaux et Forêts (ENGREF) in France, in collaboration with Centre d'etude du Machinisme Agricole du Génie Rural des Eaux et Forêts (CEMAGREF) and the CSIRO. Her research interests include sustainability assessment, whole systems thinking and knowledge integration, as well as developing methods of collective decision aiding for communities, policy makers, managers, and technical experts.

Patrick D'Aquino is Director of Research in Social Geography at CIRAD. For 10 years he focused on the conception of supports (not only tools) to accompany (not supply solutions) decentralised processes within land use planning, especially about common resources (pastures, lands, water). His concern is to reconcile social geography and the development of technical tools adapted to local stakes and constraints. Focused on social processes and local knowledge for the management of common resources, he studied and assisted local organizations that were implementing and regulating land use rights in the Sahelian zone of Africa. Now he is spreading his approach in Pacific areas. He works on geographic and other participatory modelling tools (maps, Global Imaging Systems, Agent-Based Models) and on novel planning practices to support local organisations and social dynamics.

Anne Dray is an agronomist working as junior scientist for CIRAD and a Visiting Fellow at the ANU. Her work aims at developing a negotiation support tool based on Agent-Based Modelling and Role-Playing Games joint use to facilitate equitable water allocation in Tarawa (Republic of Kiribati). She is also involved in training courses for Australian students on the Common-pool Resources and Multi-Agent Systems (CORMAS) platform.

Bernadette Foley is a PhD Research Scholar in the School of Civil and Environmental Engineering at the University of Adelaide. Her research focuses on using alternative thinking techniques and tools to advance the concept of sustainability and its assessment, with a view to better incorporating these concepts and techniques into decision-making processes for projects, companies and other applications.

Elizabeth Fulton joined the CSIRO in 2001 and has played a leading role in the development of marine ecological models, including agent-based models. She has made a significant contribution to the international peer-reviewed Marine Science and Ecological Modelling literature. She received the PhD Award of the Royal Society of Tasmania for her thesis entitled 'The effects of model structure and complexity on the behaviour and performance of marine ecosystem models'.

Randall Gray joined the CSIRO in 1990 and soon after introduced the team to the use of agent-based modelling for simulating the interaction between humans and marine populations. He has led the development of the In Vitro software being used by the CSIRO to assess strategies for managing multiple uses of coastal and marine ecosystems. Randall has been active in presenting his agent-based work at international conferences.

John Gross is a systems ecologist, previously with the CSIRO and now with the US National Park Service. His work has focused on modelling, from individual animals to ecosystem scales, with an emphasis on plant-animal interactions and population biology.

George Grozev is a research scientist with the CSIRO's Manufacturing and Infrastructure Technology (CMIT) in Melbourne. His background is in operations research, particularly network and graph theory. His recent research has focused on sustainable development issues within electricity markets, including approaches for modelling and simulation of future developments in Australia's National Electricity Market. He has participated in the development of several simulation, optimization and mapping tools for cellular mobile networks.

L. Richard Little joined the CSIRO in 1999 and has played a leading role in the development of agent-based models, particularly those related to harvesting of wild fish stocks and networking among fishers. He has published in the international peer-reviewed Marine Science and Ecological Modelling literature and received the Early Career Research Excellence Award of the Modelling and Simulation Society of Australia and New Zealand in 2005.

Ashley Kingsborough is an Environmental Consulting Engineer for KBR, Adelaide, in the Natural Resources Management Group. Particularly interested in environmentally responsible development projects for communities and ecosystems, he holds positions on the board of Engineers Without Borders South Australia, the Australian Society for Sustainability and Environmental Engineering, and the College of Environmental Engineers Australia.

Christophe Le Page is an agronomist working for CIRAD, in Montpellier France. He is a member of the Green Research Unit, which is promoting a companion modelling approach for natural resources management. With a background in fish population dynamics, he has progressively specialised in building agent-based models to simulate the interplay between ecological and social dynamics

in ecosystems holding renewable resources used or managed by different categories of stakeholders. He is participating in the development of the CORMAS platform, with a special interest in spatial aspects. He is also involved in several training courses introducing the usefulness of Agent-Based Modelling for the simulation of agro-ecosystems.

Vincent Lyne joined the CSIRO in 1985 and has played a leading role in the development of methods for use of remote-sensing data in biological oceanography, particularly with respect to fish migration patterns and fishery dynamics. He has led the development of Australia's marine habitat classification and bioregionalisation schemes. Vincent has published in the internationally peer-reviewed literature on Marine Ecology and Oceanography.

Ryan McAllister is a research scientist with the CSIRO. His research focus has been on applying complex system methodologies to Australian rangelands, in particular, exploring how pastoralists adapt to the high degree of resource variation inherent in rangelands.

A. David McDonald joined the CSIRO in 1994. He has published in international peer-reviewed journals in Economics, Statistics, Marine Science and Environmental Modelling. He is a Fellow of the Modelling and Simulation Society of Australia and New Zealand and is a member of the Editorial Board of Environmental Modelling and Software.

Holger Maier is an Associate Professor in the School of Civil and Environmental Engineering at the University of Adelaide. His research interests fall under the umbrella of sustainable infrastructure and water resources management, and include prediction and forecasting using artificial neural networks, optimisation using evolutionary algorithms, agent-based modelling, risk, uncertainty and sensitivity analysis and multi-criteria decision-analysis.

David Malovka recently graduated with a double degree in Civil and Environmental Engineering and Economics at the University of Adelaide and will soon take up a position as an Environmental Consulting Engineer for KBR Halliburton, Adelaide, in the Natural Resources Management group. His domains of interest include system design and economic analysis techniques for water engineering projects and optimisation applications such as irrigation networks.

David Newth, is a research scientist working for the CSIRO. He is currently a member of the CSIRO Centre for Complex Systems Science where he is the co-ordinator of the Network Theory Working Group. A computer scientist by training, his most recent work focuses on the analysis and modelling of complex systems, including ecosystems, social systems, gene regulatory networks and large scale infrastructure.

Pascal Perez is currently seconded by CIRAD to the ANU. He is the convenor of the HEMA international network. An agronomist by training, his most recent work focuses on human ecosystems modelling. He has developed projects in northern Thailand, Indonesia and Micronesia. He is currently teaching agent based modelling techniques at ANU.

Keith Sainsbury joined the CSIRO in 1977 as a marine ecologist and mathematical modeller. He developed one of the first applications of actively adaptive management to large-scale trawl fishing on Australia's North West Shelf in the 1980s. He has made influential contributions to the international peer-reviewed Marine Science and Ecological literature and has played a leading role in development and application of methods of assessing cumulative impacts and multiple uses of marine ecosystems. Keith was awarded the 2004 Japan Prize for ecological and sustainability research.

Ruhul Sarker obtained his PhD from DalTech, Dalhousie University, Canada. He is currently a senior lecturer at the School of Information Technology and Electrical Engineering, University of New South Wales, Canberra. Dr Sarker's research interests are in applied operations research, evolutionary optimization and multi-agent systems.

Heath Sommerville is a Water and Environmental Consulting Engineer for Sinclair Knight Merz in Melbourne. His current work revolves around finding sustainable and environmentally sound solutions to water related problems across Victoria. He guards a particular interest in developing models to represent these complex problems that can be used to explore and develop improved management processes.

Chris Stokes is a systems ecologist with the CSIRO. He is interested in the way that landscape scale heterogeneity and interactions affect ecosystem processes and behaviours, and in dealing with the challenges that this complexity presents for extrapolating detailed mechanistic understanding to broader, real-world scales.

Ian White is Professor of Hydrology at the ANU. He is a distinguished member of several international organisations, including the UNESCO International Hydrological Program. His major research theme is the prediction and measurement of the downstream impacts of landuse, including the acidification of coastal streams, modelling the groundwater dynamics of salinity and waste disposal schemes, prediction of water use by trees, sustainability of water extraction from shallow groundwater systems in coastal areas, and quantitative techniques for soil water measurement in the root and vadose zones at appropriate scales.

Ang Yang holds a Bachelors and two Masters degrees and a Postgraduate Diploma. He is currently pursuing his PhD degree in Computer Science at UNSW. His current research interests include complex adaptive systems, multi-agent

systems, modelling and simulation, evolutionary computation, network theory and web-based intelligent systems.