Editors

University of Idaho
J. D. Willford
University of Idaho
Sanford D. Eggemod
Boise State University
Stephen Crowley
Michigan State University
Michael O'Rourke

Interdisciplinary Research & Collaboration in Enhancing Communication
PART II CASE STUDIES

Chapter 7 Rising to the Synthesis Challenge in Large-Program Interdisciplinary Science: The QUEST Experience
Sarah E. Cornell and Jerrett Parker

Chapter 8 Enhancing Interdisciplinary Communication: Collaborative Engaged Research on Food Systems for Health and Well-Being
Ardyth H. Gillespie and Guan-Jen Sung

Chapter 9 Discourse Communities, Disconnects, and Digital Media: The Case of Relocalizing Economies for Sustainable Agriculture and Energy Systems
Casey Hoy, Ross B. MacDonald, Benson P. Lee, and Steve Bosserman

Chapter 10 Conceptual Barriers-to Interdisciplinary Communication: When Does Ambiguity Matter?
Paul E. Griffiths and Karola Stotz

PART III TOOLS

Chapter 11 Seeing Through the Eyes of Collaborators: Using Toolbox Workshops to Enhance Cross-Disciplinary Communication
Chris Looney, Shannon Donovan, Michael O’Rourke, Stephen Crowley, Sanford D. Eigenbrode, Liela Rotschy, Nilsa A. Bosque-Pérez, and J. D. Wulfborst

Chapter 12 Integration of Frameworks and Theories Across Disciplines for Effective Cross-Disciplinary Communication
Wayde C. Morse

Chapter 13 Modeling as a Tool for Cross-Disciplinary Communication in Solving Environmental Problems
Laura Schmitt Olabisi, Stuart Blythe, Arika Ligmann-Zielinska, and Sandra Marquart-Pyatt

PART IV CONTEXTS

Chapter 14 Interdisciplinarity as a Design Problem: Toward Mutual Intelligibility Among Academic Disciplines in the American Research University
Michael M. Crow and William B. Dabars

Chapter 15 Defining 21st Century Land-Grant Universities Through Cross-Disciplinary Research
M. Duane Nellis

Chapter 16 Graduate Education
Maura Borrego
Carol F. Stoep
Melur K. Raj

Chapter 17 Support for Research The Role of the AVP for Research
L. Michelle Lin

PART V CONCLUSION

Chapter 18 From a Distance: A Bold Proposal for Change
Gabriele Bartz

Author Index
Subject Index
Preface

Hofstadter's Law famously states: "It always takes longer than you expect, even when you take into account Hofstadter's Law. Where the study of interdisciplinary is concerned, one must acknowledge the corollary that not only does it take longer than you expect—it will be far harder and much more puzzling as a result of an attempt to solve a small although not insignificant issue in interdisciplinary pedagogy at the University of Idaho. The issue: What is the best way to facilitate communication and collaboration between members of interdisciplinary teams participating in the university's National Science Foundation-sponsored Innovative Graduate Education and Research Teamship (IGERT) project? Seven years of hard work have given insights and enlightenment, but much remains to be done with the issues that arose out of that initial "small" problem.

Our work on the nature of interdisciplinary communication and collaboration led us to organize an international conference on that topic, which met in Coeur d'Alene, Idaho, from September 30 to October 2 of 2010. That conference, "Enhancing Communication in Cross-Disciplinary Research" (EC(DR)), brought together experts in cross-disciplinary research, both practitioners and theorists, to discuss solutions to the communication challenges that confront collaborative research. The goal was to generate new ideas and useful insights about cross-disciplinary communication, the robust conversations among cross-disciplinary research practitioners, and sociologists of integrated science.

---

The essays in this volume began life as presentations at ECCDR. All presenters at the conference were encouraged to submit proposals for chapters that could be included in this collection, and after a process of peer evaluation, only a few were selected. We regret that we had to turn down numerous quality proposals, due to space limitations.
About the Editors

Michael O'Rourke is professor of philosophy and faculty in AgBioResearch at Michigan State University. His research interests include environmental philosophy; the nature of epistemic integration and communication in collaborative, cross-disciplinary research; and the nature of linguistic communication between intelligent agents. He is director of the Toolbox Project, a NSF-sponsored research initiative that investigates philosophical approaches to facilitating interdisciplinary research. He was principal investigator on the NSF-funded project “Improving Communication in Cross-Disciplinary Collaboration” (SES-0823058), which extended the development and application of the “Toolbox” method designed to improve communication and understanding among members of cross-disciplinary research teams. He has published extensively on the topics of communication, interdisciplinary theory and practice, and robotic agent design. He has been a coprincipal investigator or collaborator on funded projects involving autonomous underwater vehicles, biodiversity conservation, sustainable agriculture, and resilience in environmental systems. He cofounded and served as codirector of the Inland Northwest Philosophy Conference, an interdisciplinary conference on philosophical themes, and as coeditor of the Topics in Contemporary Philosophy series published by MIT Press.

Stephen Crowley is associate professor of philosophy at Boise State University. He is a graduate of Indiana University (Bloomington), where he was part of a rich interdisciplinary community (philosophers, computer scientists, psychologists, and biologists) working on issues in animal cognition. He was also a founding member of the Indiana University Philosophy Department's Empirical Epistemology Laboratory—a group focused on applying methods from the social sciences to issues within the theory of knowledge in particular as well.
how social dynamics affect groups with minority and marginalized brokers to open an increase in community-based processes. Specifically, the focus on network dynamics within the social science community, coordinated participation, and participatory systems. The development of novel social systems, coordinated participation, and participatory processes. By highlighting the critical role of network dynamics, the study identifies the need for further exploration of the social science community, coordinated participation, and participatory systems.
About the Contributors

Gabriele Bammer is a professor at The Australian National University (ANU). She is developing the new discipline of Integration and Implementation Sciences (I2S) to improve research strengths for tackling complex real-world problems through synthesis of disciplinary and stakeholder knowledge, understanding and managing diverse unknowns, and providing integrated research support for policy and practice change (see http://i2s.anu.edu.au). This is described in her latest book, Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems (ANU E Press, 2013). She is director of the Research School of Population Health and of the National Centre for Epidemiology and Population Health, ANU College of Medicine, Biology and Environment. She is also an ANU public policy fellow, a research fellow at the Program in Criminal Justice Policy and Management at Harvard University’s John F. Kennedy School of Government, and the convenor of the ARC Centre of Excellence in Policing and Security’s Integration and Implementation research program.

L. Michelle Bennett is the deputy scientific director for the National Heart Lung and Blood Institute (NHLBI), National Institutes of Health. The NHLBI Intramural Research Program comprises intramural scientists and clinicians working in basic, translational, and clinical research. Dr. Bennett is responsible for scientific programmatic oversight, strategic planning, and implementing strategies to support the research mission. Previously, she was a deputy director at the CCR, NCI, where she developed and implemented projects and activities that cut across a broad range of scientific areas to accelerate research progress. She has been engaged in the practical aspects of facilitating collaboration, has extensive practical experience in promoting
Mauna Bertoaga is an associate professor and former director of the Constructive Education at the National Science Foundation. She recently received her Ph.D. in education in the Division of Research, and is currently serving as a program director in the Division of Teacher Education and Research at the National Science Foundation. Bertoaga has been involved in projects that focus on improving the overall educational experience for students through innovative teaching methodologies and technology integration. Her work has been recognized with several awards and she has published extensively on topics related to science education and teacher preparation.
held a 2010-2011 AAAS Science & Technology Policy Fellowship at the National Science Foundation. Dr. Borrego’s research interests focus on interdisciplinary faculty members and graduate students in engineering and science. Dr. Borrego holds a U.S. NSF CAREER Award and Presidential Early Career Award for Scientists and Engineers for this research. She is an editorial board member for *Journal of Engineering Education* and chair of the American Society for Engineering Education’s Educational Research and Methods Division. All Dr. Borrego’s degrees are in materials science and engineering. Her MS and PhD are from Stanford University, and her BS is from University of Wisconsin–Madison.

Nilsa A. Bosque-Pérez is a professor of entomology and 16-year member of the University of Idaho College of Agricultural and Life Sciences faculty. She directs the university’s National Science Foundation-funded Interdisciplinary Graduate Education and Research Traineeship program, which funds interdisciplinary teams of students and faculty working on resilience of social-ecological systems in Idaho and Costa Rica. The program has created a unique team-based interdisciplinary graduate educational model that has received recognition across the country. She is also a member of the Toolbox Project and has engaged in interdisciplinary research and education throughout her career. She additionally conducts research on plant-virus-vector interactions, host plant resistance to insects, and the impact of diverse land uses and management practices on insect pollinators of plants.

Steven L. Bosserman is the founder of Bosserman & Associates, Inc., a management consulting firm specializing in strategic framing and organizational design. Steve enables clients to tap emerging trends in markets, technologies, and work and to develop business initiatives that increase stakeholder participation, rate of innovation/adaptation, and commercialization of products/services. His deliverables include convening and moderating networks, communities, and teams to be more responsive in the face of opportunities; coaching leaders on how to improve their decision making in conjunction with organizational culture and performance metrics; and guiding members to be more consistent and intentional with their communications both within and outside the organization. During the 1994 to 2001 period, Steve cofounded WorkSpan, Inc.—a consulting firm specializing in systems change strategies for land-grant universities, foundations, government agencies, and professional societies. Services included delivery of leadership for institutional change workshops; development of internal strategies for change predicated on convening and facilitating conversations that would not occur otherwise; and coaching of individuals/teams dedicated to influencing organizational performance. Many of these concepts are outlined in the book he coauthored, *Together We Can: Pathways to Collective Leadership in Agriculture at Texas A&M*. Steve’s recent focus is in sustainable local economic development and community self-reliance through the introduction of value network structures, value accounting systems, and complementary currencies.
// This page appears to be an introduction of researchers or experts in various fields. It mentions the contributions of individuals from different institutions, including the University of California, the Max Planck Institute, and others. The text highlights the interdisciplinary nature of the research, emphasizing collaboration and the integration of science and technology. It also mentions the importance of knowledge and innovation in public administration and the development of public policies. The text is part of a larger work, possibly a collection of essays or a report on a specific topic. //
participated in editorial projects focused on aesthetic and architectural theory. He has also served as an editorial consultant for the Getty Conservation Institute and University of Colorado, Boulder. He received a PhD in history from the University of California, Los Angeles. His dissertation, publications, and current research focus on the American research university.

**Shannon Donovan** received her BS in wildlife management from the University of New Hampshire, her MS in recreation, parks and tourism resources from West Virginia University, and her PhD in environmental science from the University of Idaho (UI). At UI, she served as a National Science Foundation Integrative Graduate Education and Traineeship fellow working on two interdisciplinary projects designed to craft conservation strategies for the Volcánica Central de Talamanca Biological Corridor of Costa Rica and the Palouse region of the Inland Northwest. Shannon has served as both a post-doc and affiliate researcher for the Toolbox Project. She is currently an assistant professor of environmental studies at the University of Alaska. She is working on the forest plan revision process with the Chugach National Forest and researches food security issues and needs within the state of Alaska. Outside of work, Shannon can be found playing outdoors with her son and husband.

**Robert Frode man (PhD, philosophy; MS, geology)** is professor of philosophy and former chair of the Department of Philosophy and Religious Studies at the University of North Texas (UNT), where he specializes in environmental philosophy, the philosophy of science policy, and the philosophy of interdisciplinarity. He served as a consultant for the U.S. Geological Survey for 8 years, was the 2001-2002 Hennebach Professor of the Humanities at the Colorado School of Mines, and was an ESRC fellow at Lancaster University in England in the spring of 2005. In addition to more than 80 published articles and $1.8 million in federal grants, Frode man is the author and/or editor of nine books, including *Geo-Logic: Breaking Ground Between Philosophy and the Earth Sciences* (SUNY, 2003), the *Encyclopedia of Environmental Ethics and Philosophy* (MacMillan, 2008), and the *Oxford Handbook of Interdisciplinarity* (OUP, 2010). Frode man is the founding director of the Center for the Study of Interdisciplinarity at UNT (www.csid.unt.edu).

**Howard Gadlin** has been ombudsman and director of the Center for Cooperative Resolution at the National Institutes of Health since the beginning of 1999. From 1992 through 1998 he was university ombudsperson at UCLA. He was also director of the UCLA Conflict Mediation Program and codirector of the Center for the Study and Resolution of Interethic/Interracial Conflict. While in Los Angeles, Dr. Gadlin served as consulting ombudsman to the Los Angeles County Museum of Art. Prior to coming to UCLA, Dr. Gadlin was ombudsperson and professor of psychology at the University of Massachusetts, Amherst. At present, Dr. Gadlin is studying the dynamics of scientific teams and collaborations. An experienced mediator,
Paul, A. Gilchrist has spent most of his career at the University of Cambridge, where he is a Professor in the Department of Economics, and at the University of Oxford, where he is a Professor in the Department of Economics. He has also spent time at the London School of Economics and the University of Chicago.

The Interdisciplinary Research Network (IDRN) provides funding for collaborative research projects that bring together experts from different fields.

Advisory Board: The IDRN Advisory Board includes leading academics from around the world, including economists, sociologists, and political scientists. The board meets regularly to discuss the direction of the network and to select new projects for funding.
Advancement of Science; fellow of the Australian Academy of the Humanities; president of the International Society for History, Philosophy and Social Studies of Biology; and from 2006 to 2012 was a member of the Australian Health Ethics Committee of NHMRC.

**Casey Hoy** is a professor and former associate chairman of the Ohio State University Department of Entomology and has held the Kellogg Endowed Chair in Agricultural Ecosystems Management since 2006, providing leadership to the interdisciplinary Agroecosystems Management Program. He received both BS and PhD degrees in entomology from Cornell University. Casey's past research has included systems analysis and its application to integrated pest management and applied ecology. His current work is developing the theoretical and applied knowledge base essential to advancements in agroecosystem health and sustainable agricultural communities. Casey also leads development of sustainable agriculture degree programs in Ohio and outreach focused on building social networks that promote entrepreneurship in diverse agricultural enterprises. His recent service includes various federal *grant review panels*, the Ohio Food Policy Advisory Council, the Cuyahoga Valley Countryside Conservancy Board of Trustees and the executive committee for the Inter-institutional Network for Food and Agricultural Sustainability, a Kellogg-endowed national network of agriculture and food system leaders. Together with his coauthors, Casey hopes to continue developing practical approaches for pursuing interdisciplinary as well as intercultural communication challenges and opportunities.

**Julie Thompson Klein** is professor of humanities in the English Department and faculty fellow for Interdisciplinary Development in the Division of Research at Wayne State University. She has also held appointments as visiting foreign professor in Japan, Fulbright lecturer in Nepal, foundation visitor at the University of Auckland, New Zealand, and Mellon fellow and visiting professor of digital humanities at the University of Michigan. In addition, she was senior fellow at the Association of American Colleges and Universities and the Center for the Study of Interdisciplinarity. Holder of a PhD in English from the University of Oregon, Klein is past president of the Association for Interdisciplinary Studies (AIS) and former editor of the AIS journal. Her books include *Interdisciplinarity: History, Theory, and Practice* (1990); *Interdisciplinary Studies Today* (coedited, 1994); *Crossing Boundaries: Knowledge, Disciplinaries, and Interdisciplinaries* (1996); *Transdisciplinarity* (coedited, 2001); *Interdisciplinary Education in K–12 and College* (edited, 2002); the monograph *Mapping Interdisciplinary Studies* (1999); *Humanities, Culture, and Interdisciplinarity* (2005); and *Creating Interdisciplinary Campus Cultures* (2010). She was also associate editor of the *Oxford Handbook on Interdisciplinarity* (2010). Klein has received awards at Wayne State University and was honored with the Kenneth Boulding Award for outstanding scholarship on interdisciplinarity, Yamamoto & Yeh Distinguished Transdisciplinary Achievement Award, and Joseph Katz Award for Distinguished Contributions.
About the Contributors

Aliya L. Islam-Meyska is an assistant professor in the Department of Philosophy, University of California, Santa Barbara. Her research focuses on the philosophy of religion and philosophical ethics.

James A. Huling is a professor of Philosophy at the University of California, Berkeley. His research interests include ethical theory, meta-ethics, and the philosophy of language.
development of a modeling curriculum at Michigan State University. She has also coauthored a modeling workbook titled "Agent Analyst: Agent-Based Modeling in ArcGIS," which exposes students to the theoretical as well as practical challenges in integrative agent-based model building.

Chris Looney is an entomologist with the Washington State Department of Agriculture. Dr. Looney's research has focused on the diversity and conservation of epigean beetles, gall-inducing wasps, and native bees in eastern Washington State. He has also participated in interdisciplinary research exploring social and biophysical dimensions of conservation in fragmented, working landscapes and approaches to improving communication within interdisciplinary research teams. His current projects include documenting the spread of exotic Lepidoptera pests in Washington State and building an online information and resource center for Pacific Northwest sawflies.

Ross B. MacDonald is a research scientist in the Ohio State University Department of Entomology, providing leadership in curricular and program development. He holds a BA degree in English literature from the University of California at Berkeley, an MA degree also in English literature from California State University at Chico, and an individual major PhD in instructional communication from the University of California at Davis. He is the former director of the Program in Science and Society in the College of Agricultural and Environmental Sciences at UC Davis and has also worked with several nonprofit organizations on peace and justice issues in Haiti, Iran, and the Basque Region of Spain. His specialty is issue-based learning and action achieved through collaborations with diverse partners across cultures and disciplines. He is also known for his extensive work on behalf of postsecondary tutoring programs. Ross continues to work with creative individuals to develop innovative curricular approaches to address important contemporary issues at the intersection of science and society.

Sandra Marquart-Pyatt is an associate professor of sociology and environmental science and policy at Michigan State University. Her research interests are in the areas of comparative social change, environmental sociology, political sociology, and quantitative methods. Her current work focuses on identifying cross-national patterns on an array of environmental attitudes, beliefs, behavioral intentions, and behaviors that include climate change, general concern for the environment, and sustainability. She has published numerous articles on the application of advanced quantitative techniques to pressing global social issues related to the environment and politics, including environmental concern, democratic values, and views of the state. She is coauthor of the monograph Nonrecursive Models: Endogeneity, Reciprocal Relationships and Feedback Loops in the SAGE series Quantitative Applications in the Social Sciences. She has also been an instructor in the InterUniversity Consortium for Political and Social Research's Summer Program in Quantitative Methods at the University of Michigan for a graduate seminar on simultaneous equation models.
Laura Schmitt Olbrich is an assistant professor at Michigan State University, jointly appointed in the Department of Environmental Science, Policy, and Management and the Department of Geography, Geology, and Environmental Sciences. She is a systems ecologist and modeler, focused on understanding and addressing the complex interactions between human activities and environmental systems. Her research focuses on the development of tools and methods to support evidence-based decision-making for sustainable development and climate change adaptation. Laura holds a BS in environmental science from Brown University and an MA and a PhD from the University of California, Berkeley. She has published extensively on topics related to climate change, sustainability, and environmental decision-making.
Prior to her appointment at Michigan State, she worked as a postdoctoral researcher with the Ecosystem Science and Sustainability Initiative, housed at the University of Minnesota. Together with coauthors Arika Ligmann-Zielinska and Sandra Marquart-Pyatt, Laura is helping create a master's level environmental modeling certificate at Michigan State, which will be offered beginning in fall semester 2013.

Jenneth Parker, PhD (Sussex), Msc (LSE), BA (Cardiff), Cert Ed, is a research director at the Schumacher Institute, dedicated to ‘putting people at the heart of a sustainable economy’. She has a background in philosophies of science, social science, and ethics, which underpins her approach to transdisciplinary research on sustainability. She has undertaken policy work for UNESCO and the European Union. She is currently working on the transdisciplinary critique and synthesis aspects of the EU Framework Programme 7-funded CONVERGE project. In addition to her academic qualifications, she is a qualified adult and community educator and experienced facilitator in participatory planning events.

David Pietrocola is a robotics and software engineer with a variety of experiences in research, government, and industry. During his 18-month appointment at the National Science Foundation, David served as the analyst for the IGERT program in the Division of Graduate Education. His contributions spanned a variety of projects and initiatives, a portfolio analysis of the IGERT program, a report to Congress on communication of science training for IGERT trainees, and a forthcoming NSF report on recent trends and outcomes from IGERT awards. David earned an MS in systems engineering from the University of Pennsylvania and a BS in electrical engineering with honors and Phi Beta Kappa from Trinity College in Hartford, Connecticut. He has published and presented peer-reviewed research in several areas, including autonomous mobile robots, agent-based modeling, virtual agents, human behavior modeling, serious games, digital copyright laws, and graduate education. He has helped develop several award-winning autonomous robots for outdoor navigation in uncertain environments and has been an organizer for the Trinity College Fire-Fighting Home Robot Contest since 2006. He is a member of IEEE, the IEEE-USA Intellectual Property Committee, and the IEEE-USA Research and Development Committee.

Melur K. Ramasubramanian is D. W. Reynolds Professor of Mechanical Engineering and department chair at Clemson University, South Carolina. He also holds a joint faculty position in bioengineering. Prior to that, he was most recently program director for the Integrative Graduate Education and Research Traineeship program at the National Science Foundation from July 2009 to 2012 and a professor of mechanical and aerospace engineering, North Carolina State University, Raleigh, from 1994. In addition, he held an associate appointment with the Joint UNC-NC State Biomedical Engineering Department. He was the director of the Mechatronics Program.
Liela Rotsky is a graduate student in linguistics at The Ohio State University. Her research focuses on formal semantics and pragmatics. She has an MA in teaching English as a second language from the University of Idaho, where she also served as an English Language Tutor. She became involved with the Toolbox Project in 2010. As a member of the project, she has contributed to the development of the translational health sciences and climate science applications of the Toolbox approach.

Carol J. Steed is a program officer for the Interdisciplinary Graduate Education and Training program, the Science, Mathematics, and Engineering Program, and for the University of Maryland, Baltimore County. She has been involved in the development of educational tools since 2004 and was the acting director of the Division of Graduate Education in the National Science Foundation (NSF). She has been involved in the development of educational tools for the past 10 years. She served as vice president of the Council for Basic Education and director of the National Science Foundation, as well as a member of the Board of Directors of the American Association for Higher Education. She served as an advisor to the National Science Foundation, the National Academy of Sciences, and the National Academy of Engineering.

Daniel Sokols is a Research Professor and Chancellor's Professor in the Department of Psychology and Social Behavior. He received his PhD in Psychology from the University of California, Los Angeles, and has been on the faculty at Harvard University since 1987. His research focuses on the development of social and emotional skills in children and adolescents. He is a co-founder of the Early Childhood Research Network, which is a national research network on early childhood education. He has served as a consultant to a number of organizations, including the National Institutes of Health, the National Science Foundation, and the US Department of Education.
the University of California, Irvine (UCI). He holds courtesy appointments in public health, epidemiology, and nursing sciences at UCI. Dr. Stokols served as director and founding dean of the School of Social Ecology at UCI between 1988 and 1998. He is coauthor of *Behavior, Health, and Environmental Stress* (1986) and coeditor of the *Handbook of Environmental Psychology* (1987), *Environmental Simulation* (1993), and *Promoting Human Wellness* (2002). Dr. Stokols is recipient of the Career Award from the Environmental Design Research Association and UCI’s Leaders & Laurels Faculty Achievement Award. Stokols served as scientific consultant to the National Cancer Institute (NCI), Division of Cancer Control and Population Sciences, and as a member of NCI’s Science of Team Science (SciTS) team between 2005 and 2011. He is currently a team science consultant for the National Academies Keck Futures Initiative. Stokols’s research interests include (1) SciTS and factors that influence the success of transdisciplinary research and training programs; (2) the environmental psychology of the Internet, especially the ways qualities of virtual life affect people’s behavior and well-being; (3) the health and behavioral impacts of environmental stressors such as traffic congestion, crowding, and information overload; (4) the application of environmental design research to urban planning and facilities design; and (5) the design and evaluation of community health promotion programs.

David A. Stone is the associate vice president for research and an associate professor of public health at Northern Illinois University. He holds two interdisciplinary degrees (MA and PhD) from the University Professors Program at Boston University, the former combining studies in law, psychiatry, and phenomenological philosophy, and the latter combining philosophy of science, philosophy of technology, substantivist economics, sociology of work, organizational behavior, cognitive science, and expert systems. Over the past 20 years, Dr. Stone has served as an academic research scientist (public policy, health services research, public health, and clinical medicine research) at the Harvard School of Medicine, the Harvard School of Public Health, the Tufts University School of Medicine, and Sheffield University (UK). He has also served as founding director of the South East European Research Center (Greece), director of the Boston Violence Prevention Project at the Harvard School of Public Health, cofounder of the Pediatric and Adolescent Research Center at Tufts University, and director of the Fenway Health Center Research Department in Boston. As an interdisciplinary researcher and team scientist, Dr. Stone has published and taught in clinical medicine, public health, health services research, health policy, philosophy, political science, research administration and management. His most recent work seeks to provide a transdisciplinary hermeneutic basis for our understanding of interdisciplinarity.

Karola Stotz is an Australian research fellow in the Department of Philosophy at the University of Sydney. Her research contributes to a reconciliation of nature and nurture, a dualism that stands in the way of a full understanding
Guang-Hsun Sung is a PhD candidate in the Family and Community Food Decision-Making Program in the Division of Nutritional Sciences at Cornell University. During her undergraduate studies in plant sciences at National Taiwan University, she was a research assistant in plant biotechnology and in plant physiological and environmental research at the Academia Sinica of Taiwan. She connects her plant science background across disciplines with human nutrition and Taiwanese Chinese medicine for her advanced degree. She studied antioxidants in lotus embryo, and her research at Cornell contributed to the development of a chapter in her doctoral research. She currently works in various fields of practice. She was an educational assistant at the Cornell Plantations, and as a consultant, she developed and taught the course, "Empathy, Assistance, and Referral Service." She has taken part in research projects to develop a cross-cultural understanding and collaboration in Taiwan. She is a registered dietitian and has a background in dietetics. Her interests in developing cross-cultural communication methods, as well as her methodology in collaborative research, led her to the Toolbook Project. She has co-authored and contributed to several books, including "Empathy, Assistance, and Referral Service," which is a chapter in this book. 

Rick Szostak is professor of economics at the University of Alberta, where he was born and raised. He is the author of more than 30 books, including "Interdisciplinary Research and Teaching." He has worked on developing interdisciplinary research and teaching. Most recently, he has participated in a non-disciplinary-based universal classification system. This would not only help interdisciplinary researchers find relevant information but also lead to new discoveries in diverse fields.