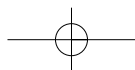


# **Rethinking Maps**

## **New Frontiers in Cartographic Theory**



## Routledge Studies in Human Geography

This series provides a forum for innovative, vibrant, and critical debate within Human Geography. Titles will reflect the wealth of research that is taking place in this diverse and ever-expanding field.

Contributions will be drawn from the main sub-disciplines and from innovative areas of work that have no particular sub-disciplinary allegiances.

### Published:

#### 1. **A Geography of Islands**

Small Island Insularity  
*Stephen A. Royle*

#### 2. **Citizenships, Contingency and the Countryside**

Rights, Culture, Land and the Environment  
*Gavin Parker*

#### 3. **The Differentiated Countryside**

*Jonathan Murdoch, Philip Lowe, Neil Ward and Terry Marsden*

#### 4. **The Human Geography of East Central Europe**

*David Turnock*

#### 5. **Imagined Regional Communities**

Integration and Sovereignty in the Global South  
*James D. Sidaway*

#### 6. **Mapping Modernities**

Geographies of Central and Eastern Europe 1920–2000  
*Alan Dingsdale*

#### 7. **Rural Poverty**

Marginalisation and Exclusion in Britain and the United States  
*Paul Milbourne*

#### 8. **Poverty and the Third Way**

*Colin C. Williams and Jan Windebank*

#### 9. **Ageing and Place**

*Edited by Gavin J. Andrews and David R. Phillips*

#### 10. **Geographies of Commodity Chains**

*Edited by Alex Hughes and Suzanne Reimer*

#### 11. **Queering Tourism**

Paradoxical Performances at Gay Pride Parades  
*Lynda T. Johnston*

#### 12. **Cross-Continental Food Chains**

*Edited by Niels Fold and Bill Pritchard*

#### 13. **Private Cities**

*Edited by Georg Glasze, Chris Webster and Klaus Frantz*

**14. Global Geographies of Post Socialist Transition**

*Tassilo Herrschel*

**15. Urban Development in Post-Reform China**

*Fulong Wu, Jiang Xu and Anthony Gar-On Yeh*

**16. Rural Governance**

International Perspectives  
*Edited by Lynda Cheshire, Vaughan Higgins and Geoffrey Lawrence*

**17. Global Perspectives on Rural Childhood and Youth**

Young Rural Lives  
*Edited by Ruth Panelli, Samantha Punch, and Elsbeth Robson*

**18. World City Syndrome**

Neoliberalism and Inequality in Cape Town  
*David A. McDonald*

**19. Exploring Post Development**

*Aram Ziai*

**20. Family Farms**

*Harold Brookfield and Helen Parsons*

**21. China on the Move: Migration, the State, and the Household**

*C. Cindy Fan*

**22. Participatory Action Research Approaches and Methods: Connecting People, Participation and Place**

*Sara Kindon, Rachel Pain and Mike Kesby*

**23. Time-Space Compression: Historical Geographies**

*Barney Warf*

**24. Sensing Cities**

*Monica Degen*

**25. International Migration and Knowledge**

*Allan Williams and Vladimir Baláž*

**26. The Spatial Turn: Interdisciplinary Perspectives**

*Barney Warf and Santa Arias*

**27. Whose Urban Renaissance? An International Comparison of Urban Regeneration Policies**

*Libby Porter and Katie Shaw*

**28. Rethinking Maps**

*Martin Dodge, Rob Kitchin and Chris Perkins*

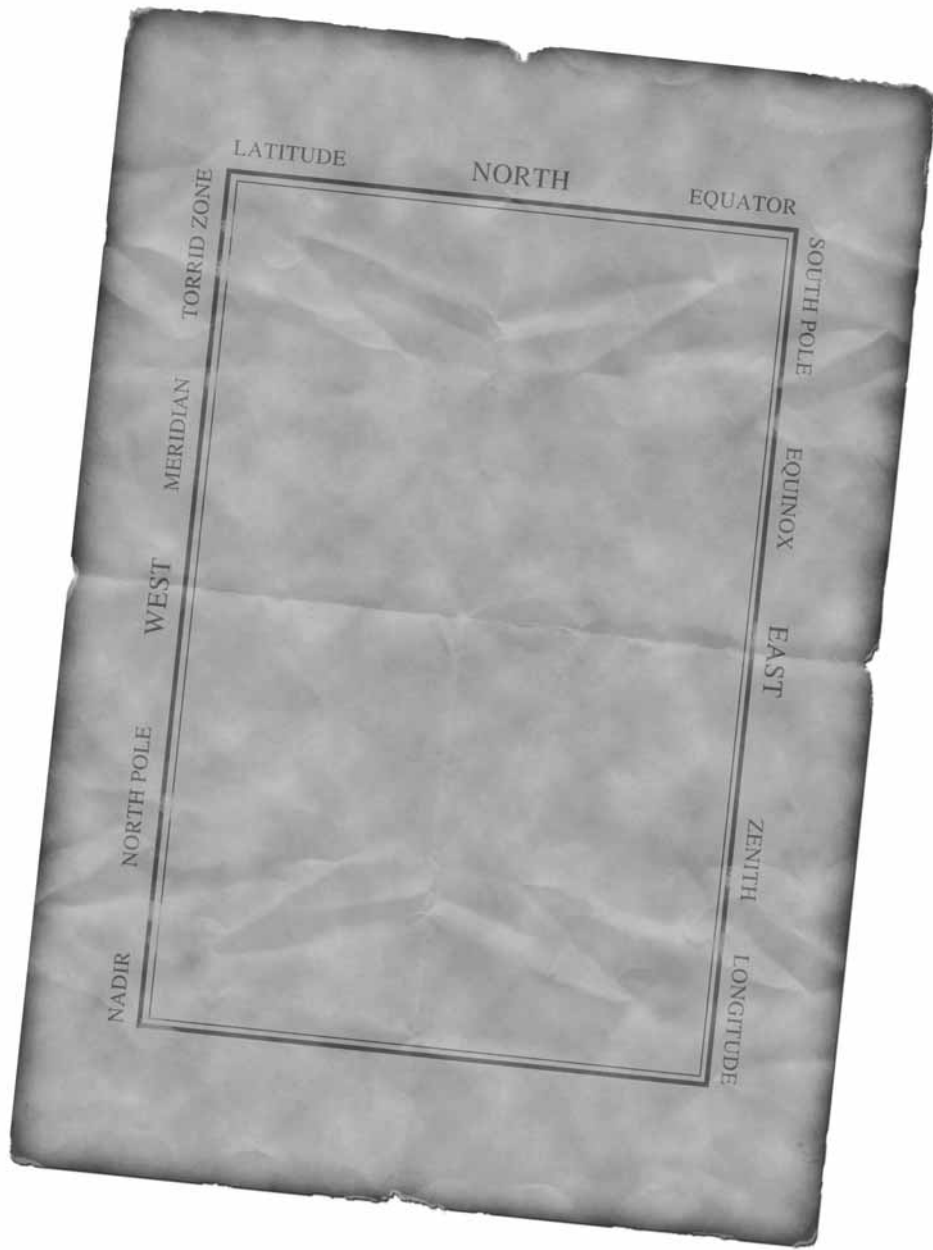
**Not yet published:**

**29. Design Economies and the Changing World Economy: Innovation, Production and Competitiveness**

*John Bryson and Grete Rustin*

**30. Critical reflections on Regional Competitiveness**

*Gillian Bristow*



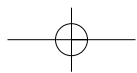
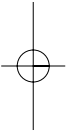
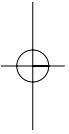
# **Rethinking Maps**

## **New Frontiers in Cartographic Theory**

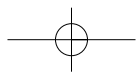
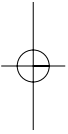
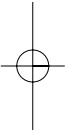
**Martin Dodge,<sup>1</sup> Rob Kitchin<sup>2</sup> and  
Chris Perkins<sup>1</sup>**

- 1 Geography, School of Environment and Development,  
University of Manchester, Oxford Road, Manchester, M13 9PL, UK.  
2 NIRSA and Department of Geography, National University of Ireland,  
Maynooth, County Kildare, Ireland.

 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK



**Martin dedicates this book to his sisters  
Alison and Susan**





# Contents

<i>List of illustrations</i>	xi
<i>Contributors</i>	xiii
<i>Preface</i>	xviii
<b>1 Thinking about maps</b>	1
ROB KITCHIN, CHRIS PERKINS AND MARTIN DODGE	
<b>2 Rethinking maps and identity: choropleths, clines and biopolitics</b>	26
JEREMY W. CRAMPTON	
<b>3 Rethinking maps from a more-than-human perspective: nature-society, mapping and conservation territories</b>	50
LEILA HARRIS AND HELEN HAZEN	
<b>4 Web mapping 2.0</b>	68
GEORG GARTNER	
<b>5 Modelling the earth: a short history</b>	83
MICHAEL F. GOODCHILD	
<b>6 <i>theirwork</i>: the development of sustainable mapping</b>	97
DOMINICA WILLIAMSON AND EMMET CONNOLLY	
<b>7 Cartographic representation and the construction of lived worlds: understanding cartographic practice as embodied knowledge</b>	113
AMY D. PROPEN	
<b>8 <i>The 39 Steps</i> and the mental map of classical cinema</b>	131
TOM CONLEY	

x	<i>Contents</i>	
9	<b>The emotional life of maps and other visual geographies</b> JIM CRAINE AND STUART C. AITKEN	149
10	<b>Playing with maps</b> CHRIS PERKINS	167
11	<b>Ce n'est pas le monde (This is not the world)</b> JOHN KRYGIER AND DENIS WOOD	189
12	<b>Mapping modes, methods and moments: a manifesto for map studies</b> MARTIN DODGE, CHRIS PERKINS AND ROB KITCHIN	220
	<i>Index</i>	244

## Illustrations

### Figures

1.1	The basic map communication model	6
1.2	MacEachren's conceptual device, the "cartography cube"	8
1.3	A paper rendering of indigenous hunting "map"	19
1.4	Is this image a map? Population change in Ireland, 1996–2002	22
2.1	Typical choropleth map showing black percentage of total population	28
2.2	Clines in the percentage of blood group A in Japan	30
2.3	Language distribution in the Austro-Hungarian region	42
4.1	Semantic web stack	70
4.2	Textual associations to web 2.0	71
4.3	Change of research emphasis in the semiotic dimensions	79
5.1	An area-class map; part of the CalVeg map of approximately homogeneous vegetation type	85
5.2	Major roads of the Los Angeles basin	87
5.3	An example of a topological structure	89
6.1	Participants' contribution via the <i>theirwork</i> interface	104
6.2	Moths	108
7.1	NASA Photo AS17–148–22727 taken December 7, 1972	117
8.1	Still from <i>The 39 Steps</i> (1935)	138
8.2	Still from <i>The 39 Steps</i> (1935)	140
8.3	Still from <i>The 39 Steps</i> (1935)	141
8.4	Still from <i>The 39 Steps</i> (1935)	142
8.5	Still from <i>The 39 Steps</i> (1935)	142
8.6	Still from <i>The 39 Steps</i> (1935)	143
9.1	Madelaine de Scudéry's <i>Carte du Pays de Tendre</i> in <i>Clélie</i> (1654)	153
9.2	Mixing moving image and static map in <i>High Sierra</i> (1941)	157
10.1	Changing golf-mapping displays	179
10.2	Tools for designing golf maps online: APDC mapping interface	181
10.3	<i>Links 2003</i> 12th hole, Augusta, Georgia	183

xii *Illustrations*

10.4	Reviewing golf-map design	184
12.1	Street photography captures the immediate and embodied use of mapping	232
12.2	The work of multiple map authors contributing to the OpenStreetMap project	233
12.3	Newspaper story of Satnav mapping errors	235
12.4	Memories of mapping	238

**Tables**

1.1	Rules for knowing the world: binary opposites	3
4.1	Top mashup tags, August 2008	73
4.2	Top APIs for mashups, August 2008	73
4.3	The 12 most popular APIs, August 2008	73
10.1	Playing with language	170

## Contributors

### **Stuart C. Aitken**

Department of Geography, San Diego State University San Diego, USA and  
Department of Geography and The Norwegian Centre for Child Research,  
Norwegian University of Science and Technology, Trondheim

Stuart Aitken is Professor of Geography at San Diego State University. His books include *Philosophies, People, Places and Practices* (with Gill Valentine; Sage 2004), *Geographies of Young People: The Morally Contested Spaces of Identity* (Routledge 2001), *Family Fantasies and Community Space* (Rutgers University Press 1998), *Place, Space, Situation and Spectacle: A Geography of Film* (with Leo Zonn; Rowman and Littlefield 1994) and *Putting Children in Their Place* (Association of American Geographers 1994). His interests include film and media, critical social theory, qualitative methods, public participation GIS, children, families and communities. Stuart is past co-editor of *The Professional Geographer* and current North American editor of *Children's Geographies*.

### **Tom Conley**

Department of Romance Languages and Literatures, Harvard University, USA

Tom Conley is member of the Departments of Romance Languages and Visual/Environmental Studies at Harvard University. He studies cartography through literature, film and theory and is the author of *The Self-Made Map: Cartographic Writing in Early Modern France* (University of Minnesota Press 1996) and *Cartographic Cinema* (University of Minnesota Press 2007). He has contributed two essays to David Woodward (ed.) *The History of Cartography 3: The European Renaissance* (University of Chicago Press 2007) and is translator of Christian Jacob, *The Sovereign Map* (University of Chicago Press 2006).

### **Emmet Connolly**

Dublin, Ireland

Emmet Connolly is an interaction designer and artist. His work encompasses open source programming, mapping methodologies, information visualization,

xiv *Contributors*

citizen media and community activism. Emmet earned an MA in digital art and technology at the University of Plymouth and currently works for Google in Dublin.

**Jim Craine**

Department of Geography, California State University, Northridge, USA

Jim Craine is an Assistant Professor of Geography at California State University, Northridge. He specializes in the geography of media and also works applying geovisualization theory to digital and analogue cartography. He is co-editor of *Aether: The Journal of Media Geography*, <<http://www.aetherjournal.org>>.

**Jeremy W. Crampton**

Department of Geosciences, Georgia State University, USA

Jeremy Crampton is Associate Professor of Geography with research interests focused on the critical approaches to cartography and GIS, the politics of identity and new spatial media. His paper 'the biopolitical justification for geosurveillance' appeared in the *Geographical Review* in 2007, and a progress report on cartography and new spatial media was published in *Progress in Human Geography* in 2008. He is editor of *Cartographica* and also a section editor for cartography in the *International Encyclopedia of Human Geography* (Elsevier 2009) and author of the forthcoming book *Mapping: A Critical Introduction to Cartography and GIS* (Wiley-Blackwell).

**Martin Dodge**

School of Environment and Development, University of Manchester, UK

Martin Dodge is a Lecturer in Human Geography and his research focuses primarily on the geography of cyberspace, particularly ways to map and visualize the Internet and the Web. He is the curator of a web-based *Atlas of Cyberspaces* (<<http://www.cybergeography.org/atlas>>) and has co-authored two books, *Mapping Cyberspace* (Routledge 2000) and *Atlas of Cyberspace* (Addison-Wesley 2001) both with Rob Kitchin and recently co-edited a book on *Geographic Visualization* (Wiley 2008). He has a PhD from the University of London.

**Georg Gartner**

Institute of Geoinformation and Cartography, Vienna University of Technology

Georg Gartner is a Full Professor in the research group in cartography at the Vienna University of Technology. He holds graduate qualifications in geography and cartography from the University of Vienna and received his PhD and his Habilitation from the Vienna University of Technology. He

*Contributors* xv

was awarded a Fulbright grant to the University of Nebraska at Omaha in 1997 and a research visiting fellowship to the Royal Melbourne Institute of Technology in 2000 and to South China Normal University in 2006. He serves as Vice President of the International Cartographic Association and is the organizer of the International Symposia on Location Based Services & TeleCartography and co-editor of the book series *Lecture Notes on Geoinformation and Cartography* (Springer) and the *Journal of Location Based Services* (Taylor & Francis).

**Michael F. Goodchild**

National Center for Geographic Information and Analysis and Department of Geography, University of California, Santa Barbara, USA

Michael Goodchild is Professor of Geography at the University of California, Santa Barbara, and Director of spatial@ucsb. He received his BA degree in physics from Cambridge University in 1965 and his PhD in geography from McMaster University in 1969. He was Director of the National Center for Geographic Information and Analysis from 1991 to 1997. He was elected member of the National Academy of Sciences and Foreign Fellow of the Royal Society of Canada in 2002, and member of the American Academy of Arts and Sciences in 2006. His published books include *Accuracy of Spatial Databases* (Taylor & Francis 1989); *Geographical Information Systems: Principles and Applications* (GeoInformation Group 1991); *Environmental Modeling with GIS* (Wiley 1996); *Scale in Remote Sensing and GIS* (CRC Press 1997); *Interoperating Geographic Information Systems* (Springer 1999); *Geographic Information Systems and Science* (Wiley 2001); *Uncertainty in Geographical Information* (CRC Press 2002); *Foundations of Geographic Information Science* (CRC Press 2003); *Spatially Integrated Social Science* (OUP 2004); *GIS, Spatial Analysis and Modeling* (ESRI Press 2005); and *Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools* (Matador 2006). His current research interests centre on geographic information science, spatial analysis, and uncertainty in geographic data.

**Leila Harris**

Department of Geography, University of Wisconsin-Madison, USA

Leila Harris is Assistant Professor of Geography and Environmental Studies. She works at the intersection of nature-society theory, gender studies and critical development studies. Among other research efforts, her work includes attention to social, political and institutional dimensions of environmental and developmental change in Southeastern Turkey, emergent international and institutional trends with respect to water governance, and gender-environment debates.

xvi *Contributors***Helen Hazen**

Department of Geography, Macalester College, St. Paul, USA

Helen Hazen is an environmental and medical geographer with expertise and field experience in the Americas, Africa and Oceania. After several years working in the field of conservation in the tropics, she returned to academia to complete a PhD in geography at the University of Minnesota, concentrating on issues related to national parks and international conservation agreements. Her research continues to focus on human–environment interactions, considering both applied and theoretical perspectives on environmental conservation. Her research and teaching have subsequently branched out to incorporate the geography of human health, particularly ecological approaches to health and disease.

**Rob Kitchin**

National Institute for Regional and Spatial Analysis and Department of Geography, National University of Ireland, Maynooth

Rob Kitchin is Professor of Human Geography and Director of the National Institute of Regional and Spatial Analysis (NIRSA) at the National University of Ireland, Maynooth and Chair of the Management Board of the Irish Social Sciences Platform (ISSP). He's published sixteen books, is editor of the international journal *Social and Cultural Geography*, and co-editor-in-chief of the *International Encyclopedia of Human Geography* (Elsevier 2009).

**John Krygier**

Department of Geology and Geography, Ohio Wesleyan University, USA

John Krygier is Associate Professor of Geography. He teaches cartography, GIS and geography courses at Ohio Wesleyan University, and is the author, with Denis Wood, of *Making Maps: A Visual Guide to Map Design for GIS* (Guilford Press 2005). He blogs about cartographic arcane at <http://makingmaps.net>.

**Chris Perkins**

School of Environment and Development, University of Manchester, UK

Chris Perkins is Senior Lecturer in Geography and university map curator. He is the author of four books including standard texts documenting the changing contexts of map availability (*World Mapping Today* with R.B. Parry; Bowker 1998) and has recently co-edited the second edition of the *Companion Encyclopaedia to Geography* (Routledge 2006). His research interests are centred on the different ways in which mapping may be employed and he is the first Chair of the International Cartographic Association's commission on maps in society.



**Amy Propen**

Department of English and Humanities, York College of Pennsylvania, USA

Amy Propen is Assistant Professor of Rhetoric and Composition. Her areas of research include the intersections of rhetoric and geography, with a specific focus on visual and material rhetorics and the relationships between space and the body. She has published on critical GIS and visual rhetoric and mapping, and is currently preparing a book provisionally titled *Maps, Mills, and Locative Technologies: Contexts for Understanding Material Rhetoric*.

**Dominica Williamson**

Cornwall, UK

Dominica Williamson is a freelance designer and artist based in Cornwall. Her practice looks at how sustainable design solutions can be achieved. She was the design director for Green Map's *Green Map Atlas* in 2003–4 and joined the network in 2000. She was awarded a MSc in digital futures at the School of Computing, Communications and Electronics, University of Plymouth and obtained a BA first class honours in design studies from Goldsmiths College, University of London. Her latest work can be found at <<http://ecogeographer.com>>.

**Denis Wood**

Raleigh, North Carolina, USA

Denis Wood is independent scholar and he was Professor of Design at North Carolina State University from 1974 to 1996. He curated The Power of Maps exhibitions for the Cooper-Hewitt National Museum of Design in New York and the Smithsonian in Washington. Author of *The Power of Maps* (Guilford Press 2002), *Home Rules* (with Robert Beck; Johns Hopkins University Press 1994), *Seeing Through Maps* (with Ward Kasier; ODT 2001), *Five Billion Years of Global Change* (Guilford Press 2004) and *Making Maps* (with John Krygier; Guilford Press 2005), his most recent book is *The Natures of Maps* (with John Fels; University of Chicago Press 2008). He has a PhD in geography from Clark University.

## Preface

### The Bellman's Speech

The Bellman himself they all praised to the skies –  
Such a carriage, such ease and such grace!  
Such solemnity, too! One could see he was wise,  
The moment one looked in his face!  
He had bought a large map representing the sea,  
Without the least vestige of land:  
And the crew were much pleased when they found it to be  
A map they could all understand.  
“What’s the good of Mercator’s North Poles and Equators,  
Tropics, Zones, and Meridian Lines?”  
So the Bellman would cry: and the crew would reply  
“They are merely conventional signs!  
“Other maps are such shapes, with their islands and capes!  
But we’ve got our brave Captain to thank”  
(So the crew would protest) “that he’s bought us the best –  
A perfect and absolute blank!”

(Lewis Carroll (1876), *The Hunting of the Snark*, London: Macmillan)