## **Contents**

For	reword	xi
Ac	knowledgements	xvii
Au	Authors' Biographies	
501	TO 1 TO 10 T	
1	The Power of Geographical Visualizations  Martin Dodge, Mary McDerby and Martin Turner	1
	1.1 Aims 1.2 The nature of geographic visualization 1.3 The visualization process 1.4 Digital transition and geographic visualization 1.5 The politics of visualization 1.6 The utility of geographic visualization 1.7 Conclusions References	2 2 4 5 6 8 8
2	What does Google Earth Mean for the Social Sciences?  Michael F. Goodchild	11
	2.1 Introduction 2.2 Major features of Google Earth 2.3 Fundamental spatial concepts 2.4 The social perspective 2.5 Research challenges 2.6 Conclusions References	11 12 15 18 20 22 23
3	Coordinated Multiple Views for Exploratory GeoVisualization  Jonathan C. Roberts	25
	3.1 Introduction 3.2 Data preparation 3.3 Informative visualizations 3.4 Interaction and manipulation 3.5 Tools and toolkits	25 28 31 34 40

viii CONTENTS

	3.6 Conclusions References	41 42
4	The Role of Map Animation for Geographic Visualization  Mark Harrower and Sara Fabrikant	49
	4.1 Introduction	49
	4.2 Types of time	52
	4.3 The nature of animated maps	53
	4.4 Potential pitfalls of map animation	56
	4.5 Conclusions References	61 62
5	Telling an Old Story with New Maps	67
	Anna Barford and Danny Dorling	
	5.1 Introduction: re-visualizing our world	67
	5.2 Method and content	68
	5.3 The champagne glass of income distribution	105
	References	107
6	Re-visiting the Use of Surrogate Walks for Exploring Local	
	Geographies Using Non-immersive Multimedia  William Cartwright	109
	6.1 Introduction	109
	6.2 Queenscliff Video Atlas	111
	6.3 GeoExploratorium	113
	6.4 Townsville GeoKnowledge Project	118
	6.5 Jewell Area prototype	118
	6.6 Melbourne Historical Buildings Demonstration Product	122
	6.7 Testing the user's perception of space and place	123
	6.8 Further development work	137
	6.9 Conclusion	138
	Acknowledgements References	138 139
7	Visualization with High-resolution Aerial Photography in	
	Planning-related Property Research Scott Orford	141
	7.1 Introduction	141
	7.2 Applications of aerial photography in planning-related property research	148
	7.3 Aerial photography, property and surveillance	152
	7.4 Conclusion References	155 156
8	Towards High-resolution Self-organizing Maps of Geographic	
	Features	159
	André Skupin and Aude Esperbé	
	8.1 Introduction	159
	8.2 Self-organizing maps	160
	8.3 High-resolution SOM	162

ix

	8.4 High-resolution SOM for Climate Attributes 8.5 Summary and outlook Acknowledgements References	166 179 180 180
9	The Visual City  Andy Hudson-Smith	183
	Suprimbers to camporator tamaso stump man Su	102
	9.1 The development of digital space 9.2 Creating place and space	183 184
	9.3 Visual cities and the visual Earth	188
	9.4 The development of virtual social space	. 192
	9.5 The future: the personal city References	196
	References	196
10	Three-dimensional Geographical Visualization	199
	Ifan D. H. Shepherd	400
	10.1 Introduction 10.2 What is gained by going from 2D to 3D?	199 201
	10.3 Some problems with 3D views	201
	10.4 Conclusions	217
	Acknowledgements	218
	References	218
11	Experiences of Using State of the Art Immersive	
	Technologies for Geographic Visualization  Martin Turner and Mary McDerby	223
	11.1 Introduction	223
	11.2 The human visual system	224
	11.3 Constructing large-scale visualization systems 11.4 Rules and recommendations	232 236
	11.5 The future – a better and cheaper place	238
	References	239
12	Landscape Visualization: Science and Art Gary Priestnall and Derek Hampson	241
		2/1
	12.1 Landscape visualization: contexts of use 12.2 The need for ground truth	241 242
	12.3 Outcomes from fieldwork exercises	244
	12.4 Broadening the context	246
	12.5 The Chat Moss case study	247
	12.6 Discussion 12.7 Conclusion	254 256
	Acknowledgements	250
	References	257
13	Visualization, Data Sharing and Metadata  Humphrey Southall	259
	13.1 Introduction	259
	13.2 The data documentation initiative and the aggregate data extension	260

x CONTENTS

	<ul> <li>13.3 Implementing the DDI within the GB Historical GIS</li> <li>13.4 Driving visualization in Vision of Britain</li> <li>13.5 Conclusion Acknowledgements References </li> </ul>	262 267 273 275 275
14	Making Uncertainty Usable: Approaches for Visualizing Uncertainty Information Stephanie Deitrick and Robert Edsall	277
	<ul> <li>14.1 Introduction: the need for representations of uncertainty</li> <li>14.2 The complexity of uncertainty</li> <li>14.3 Uncertainty visualization: a user-centred research agenda</li> <li>14.4 Conclusion References</li> </ul>	277 278 286 288 288
15	Geovisualization and Time — New Opportunities for the Space-Time Cube  Menno-Jan Kraak	293
	<ul> <li>15.1 Introduction</li> <li>15.2 Hägerstrand's time geography and the space-time cube</li> <li>15.3 Basics of the space-time cube</li> <li>15.4 The space-time cube at work</li> <li>15.5 Discussion References</li> </ul>	293 295 296 297 303 305
16	Visualizing Data Gathered by Mobile Phones Michael A. E. Wright, Leif Oppermann and Mauricio Capra	307
	16.1 Introduction 16.2 What are we visualizing? 16.3 How can we visualize this data? 16.4 Case studies 16.5 Discussion 16.6 Conclusion References	307 308 309 311 314 316
Ind	Index	