

Table of Contents

Foreword	xiii
Michael F. GOODCHILD	
Introduction	xix
Stéphane ROCHE and Claude CARON	
PART 1. ISSUES AND PROSPECTS OF GIS RELATIONSHIPS, ORGANIZATIONS AND SOCIETY	1
Chapter 1. GIS: A Historical Process. The Past as Support for the Future	3
Nicholas CHRISMAN	
1.1. Introduction	3
1.2. The original concept	4
1.2.1. Origins of GIS	5
1.2.2. Raster origins?	7
1.2.3. Vector origins?	8
1.3. Geography discovers GISs.	9
1.3.1. The scientific debate ignores the main question.	12
1.4. Trying to find assistance: the study of sciences and technologies	17
1.5. A few fundamental principles	20
1.6. Closing the loop	22
1.6.1. The “software” component	23
1.6.2. The “data” component	25
1.6.3. The “results” component	27
1.7. A conclusion geared toward the future	28
1.8. Bibliography	29

Chapter 2. The Space and Place Trades versus Geographic Information Technologies: Babel and Esperanto	37
Grégoire FEYT	
2.1. Introduction	37
2.1.1. The “historical mission” of GISs	38
2.1.2. GIS, first a “machine raising questions”	39
2.2. Interface trades	40
2.2.1. A complex system	40
2.2.2. A system under pressure	42
2.3. The long progress toward the culture of the digital GI	48
2.3.1. GIT and trades: a culture of pioneers	49
2.4. Temporary conclusion	54
2.5. Bibliography	55
Chapter 3. The Future of GIS from an IT Evolution Perspective	57
Lin GINGRAS and François BERGERON	
3.1. Introduction	57
3.2. Recent cases linking IT and GIS	58
3.2.1. The recovery of Columbia	58
3.2.2. Product management at Gillette	59
3.2.3. Trailer management at Schneider National.	61
3.3. IT developments	61
3.3.1. Integrated business applications: ERP, CRM	62
3.3.2. Wireless networks	62
3.3.3. Tablets and PDA	63
3.3.4. Quick development technologies	64
3.3.5. Ubiquitous information technology	64
3.4. Consequences and impacts of IT developments on GIS	66
3.4.1. Managing wireless	66
3.4.2. Conscious context solutions	67
3.4.3. Information push	68
3.4.4. User personalized information	69
3.4.5. Digital artifacts in embedded tools and objects	70
3.4.6. The other dimensions: application structure and security applications	70
3.5. Potential gains and risks with GIS	71
3.5.1. Operational benefits	71
3.5.2. Managerial benefits	72
3.5.3. Strategic advantages	72
3.6. The importance of strategic harmonization for project success .	73

3.6.1. Business strategy	73
3.6.2. The GIS strategy	74
3.6.3. Corporate structure	75
3.6.4. GIS environmental structure	76
3.6.5. Corporate performance and strategic harmonization	77
3.7. An indicator of GIS application opportunity	77
3.7.1. The “UBIGIS” grid to evaluate GIS application opportunities	78
3.8. Conclusion	79
3.9. Bibliography	80
PART 2. GIS AND ITS PLACE WITHIN ORGANIZATIONS	83
Chapter 4. The Role and Value of GIS in Organizations	85
Claude CARON	
4.1. Introduction	85
4.2. Social context of GIS: images, symbols and rationalities	86
4.2.1. GIS: a rational role	87
4.2.2. GIS: a symbolic role	89
4.2.3. The role of GIS: multiple rationalities	90
4.2.4. Multiple GIS rationalities: a few typical roles	91
4.3. Evolution of the GIS role	94
4.3.1. Toward more diversified roles	94
4.3.2. Toward higher decision levels	95
4.3.3. A succession of different perspectives	96
4.4. The value of GIS	97
4.4.1. Value: philosophical or economical concept	97
4.4.2. Philosophical perspective of value	98
4.4.3. Economic perspective of value	99
4.5. The measure of value for GIS	99
4.5.1. Quantitative approaches	100
4.5.2. Qualitative measure approaches	105
4.6. Role and value of a GIS	106
4.6.1. Relational terms of the concepts of role and value	106
4.6.2. Possible consequences according to desired roles and anticipated value	108
4.7. Conclusion	111
4.8. Bibliography	112

Chapter 5. Social Use and Adoption Models of GIS	115
Stéphane ROCHE and Benoît RAVELEAU	
5.1. Introduction	115
5.2. From ICT to GIT	116
5.2.1. GIT: a subset of ICT	117
5.2.2. Characteristics of GIT compared with ICT	117
5.3. For a social and technical approach dedicated to practices and uses	119
5.3.1. The notion of use	119
5.3.2. From technical to social commonality	120
5.3.3. Three levels of understanding social uses	122
5.4. Theoretical approaches of diffusion and innovation	124
5.4.1. The diffusion approach	125
5.4.2. The technical innovation approach	127
5.4.3. The school of translation	129
5.5. The appropriation approach	131
5.5.1. Antagonisms between espousing technology and usage technology	132
5.5.2. Appropriation or modes of usage structure	133
5.5.3. Determining variables of appropriation	135
5.6. Conclusion	138
5.7. Bibliography	139
Chapter 6. GIS Engineering: Its Place in Organizations	145
Henri PORNON	
6.1. Introduction	145
6.2. GIS, project of the organization	146
6.3. A shift between words and reality	147
6.3.1. Observations from GIS specialists	147
6.3.2. The analysis by sociologists of computerization processes .	150
6.3.3. GIS deployment: smooth sailing or chaotic process?	150
6.4. A few useful concepts of organizational sociology	151
6.4.1. Strategies of stakeholders, action and geomatic systems	151
6.4.2. Computerization process: stakeholders searching for opportunities	152
6.4.3. Differentiation GIS and integration GIS	153
6.5. The development of geomatics in organizations	155
6.5.1. Project or process?	155
6.5.2. Projects from stakeholders or from the organization?	156

6.5.3. A model to identify the descriptive parameters of the methodologies	156
6.5.4. Synthesis: the process of geomatic development	158
6.5.5. Descriptive parameters of organizational contexts	159
6.6. The usefulness of geomatics in organizations and on the field	160
6.6.1. Favoring federating or sectoral GISs?	160
6.6.2. Cooperation and information sharing: an optimistic objective?	161
6.6.3. Changing points of view on the use of geomatics in organizations	162
6.6.4. Changing points of view on the usefulness of GISs in the territory	163
6.6.5. Measuring the organizational impact of GIS	164
6.7. Conclusion: some questions under discussion	165
6.7.1. What roles do geographic computer tools play?	165
6.7.2. What roles do methods play?	166
6.7.3. The paradoxical role of project managers (the champions)	166
6.7.4. Conclusion: transposing to land planning?	167
6.8. Bibliography	168
Chapter 7. GIS, Cognition and Business	171
Wladimir MAJOR and François GOLAY	
7.1. Introduction	171
7.2. Nature and challenges of territorial cooperation	172
7.2.1. The territory, a challenge for stakeholders striving for power	172
7.2.2. Rules of territorial cooperation	173
7.2.3. Real challenges of territorial cooperation	174
7.3. Territoriality: an emergence of the cognitive environments of the stakeholders	177
7.3.1. The territorial object and territoriality	178
7.3.2. The territorial object and its social representation	179
7.3.3. Territory: an appropriate space	182
7.3.4. Cognitive environment and territoriality	184
7.4. Cognitive model diversity of territorial stakeholders (e.g. Switzerland)	186
7.4.1. Lexical analysis of stakeholder views: methodology and results	186
7.4.2. Symbolic history of territoriality and GIS	188
7.5. Implications of cognitive model diversity on GIS	193

7.5.1. Role and limits of current GISs	193
7.5.2. Suggestions for implementing GISs	194
7.6. Conclusion	195
7.7. Bibliography	197
PART 3. EXAMPLES OF GIS USES IN ORGANIZATIONS	201
Chapter 8. GIS and Territorial Governance: Examples in Quebec and Tunisia	203
Jean-Jacques CHEVALLIER	
8.1. Introduction	203
8.2. Projects involved	204
8.2.1. GIR project (integrated management of resources in forestry)	205
8.2.2. AMILCAR project	206
8.2.3. CBE project	207
8.2.4. “Territorial profile” project	208
8.3. Characteristics of the territorial decision	209
8.4. Territorial information, of course, but why?	210
8.4.1. Governments and civil society	210
8.4.2. Possible and desirable participation	212
8.5. Information for territorial decision making	214
8.5.1. Management cycle and decision cycle	215
8.5.2. Terminology used	217
8.5.3. The different functions of information	218
8.6. Effects on government information systems	221
8.6.1. Consequences on required data	221
8.6.2. Consequences on technologies	222
8.6.3. Consequences on organizations	225
8.6.4. Consequences on human resources	225
8.7. GI for territorial decision: toward a new paradigm	226
8.8. Bibliography	227
Chapter 9. Digital Participation and “Access” in UK Local Government	229
Robin SMITH	
9.1. Introduction	229
9.2. The “Information Society” in European and UK policy	230
9.2.1. European policy	230
9.2.2. UK e-government policy and research context	233

9.3. Digital participation in UK local government	237
9.3.1. Website survey and case study selection	237
9.3.2. Rushcliffe Borough Council's interim local plan consultation	239
9.3.3. The City of Edinburgh Council's first community plan consultation	241
9.3.4. The London Borough of Lewisham's Dialogue Project	243
9.4. Components of public participation	245
9.4.1. Public participation in a local context.	246
9.4.2. Public participation in a strategic context	249
9.4.3. Public participation in a mixed decision-making context	252
9.5. Public participation GIS and components of access	255
9.5.1. GIS and access	255
9.5.2. Components of access	257
9.6. Conclusion	261
9.7. Bibliography	265
Chapter 10. GIS and Citizen Participation: Urban Revitalization Projects in the USA	269
Rina GHOSE	
10.1. Introduction.	269
10.2. The role of local contingencies in participatory GIS.	272
10.3. Production and use of spatial knowledge in participatory GIS	274
10.4. Local variation of participatory GIS development	278
10.5. Conclusion and directions for future research.	279
10.6. Bibliography	280
Chapter 11. Geographic Information and Inter-Organizational Partnerships	285
Henri PORNON, Zorica NEDOVIC-BUDIC and Jeffrey PINTO	
11.1. Introduction.	285
11.2. The context of partnerships	287
11.3. Conceptual concepts.	289
11.3.1. Framework proposed by H. Pornon	290
11.3.2. The framework proposed by Z. Nedovic-Budic and J. K. Pinto	297
11.4. Other aspects involving GI sharing	301
11.4.1. Legal aspects	301
11.4.2. Standardization and interoperability questions.	302
11.4.3. Sociological and organizational aspects.	304

11.5. Key success factors of inter-organizational partnerships	305
11.5.1. Aspects favoring or hindering the development of partnerships	305
11.5.2. Advice to increase the chances of success in projects	306
11.5.3. Lessons learned from the [JOH 01] study.	310
11.6. Conclusion	311
11.7. Bibliography	312
Conclusion.	319
Stéphane ROCHE, Claude CARON and Carine PÉRIBOIS	
List of Authors	325
Index	329