

# **The SAGE Handbook of GIS and Society – Edited by Timothy Nyerges, Helen Couclelis and Robert McMaster**

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**The SAGE Handbook of GIS and Society . Timothy Nyerges, Helen Couclelis and Robert McMaster ( eds ), SAGE Publications , London, UK , 2011 , +576 pp, ISBN 978 1 4129 4645 2 ( hardback) Stg £90.00.**

Since the early 1990s, Geographical Information Systems (GIS) has emerged as a social-spatial technology and been widely adopted by government, business, and other organisations to address a variety of complex natural, social, and infrastructure issues. A burgeoning literature has explored GIS technologies and their application to a range of social problems. However, limited thought has been given to the challenges and emerging societal issues related to the use of GIS and how the development of GIS is influenced by various and ever-changing social and structural conditions. Such issues suggest the GIS research agenda should be broadened to incorporate questions of societal and philosophical implications and the potential social embeddedness of GIS development. This book makes a fine contribution to this emergent body of work.

The Handbook of GIS and Society is structured around societal perspectives through a series of wide-ranging topics that collectively contribute to the very important issue of how success in using GIS is intimately linked to society's understanding of GIS. These wide-ranging topics are divided into six broad themes. The first theme introduces important spatial concepts, spatial methodology and the linkage with GIS to enhance understanding of social phenomena (Chapter 2 and Chapter 3), and the social influence on GIS applications and changing roles of GIS (Chapter 4 and Chapter 5). This establishes the foundations of research into GIS and society that underpin the main assessments presented in the rest of the book.

The second theme focuses on the four most important GIS utilities that people have come to rely on in modern society, including cyberinfrastructure (Chapter 6), spatial data infrastructure (SDI) (Chapter 7), population health models (Chapter 8), and location-based service and associated technologies (Chapter 9). In addition to a comprehensive review of theoretical and methodological concepts, a number of case studies are provided in each chapter to demonstrate the kinds of technical advances that facilitate the integration of GIS with everyday life as well as its contribution to the scientific applications and benefits (e.g., to population health and environmental sustainability). However, some topics discussed are no longer as new as they were a few years earlier, for example, the use of Internet and client–server technology, while other concerns are emerging or becoming more important (e.g., spatial epidemiology models).

The alternative representation in GIS and society is probably the most interesting part of the book to me. In the third theme, each chapter explicitly describes the alternative representations in visual, computational, and database involved in GIS technology and society research, except Chapter 11,

which focuses instead on alternative cultural perspectives in the use of GIS. Of particular note is an interesting illustration of utilising alternative visualisation techniques in assessing human-scaled variation (Chapter 10), and spatial modelling of social networks to explore invisible and complex social connections in society (Chapter 12). Chapter 13, in particular, demonstrates the recent developments in GIS that offer a new framework for studying individual social activities and their relationships in a space–time context. Each topic is supported by a clear theoretical outline, and even though some content is methodological, the authors present complex mathematical concepts in an intuitive way, without overloading the text with notation.

The fourth theme reveals the role of GIS within organisations and institutions that make up an essential part of modern society. The key foci include: recent developments and trends in SDI (Chapter 14); the application of SDI in cadastres management (Chapter 15); GIS collaborative systems for urban planning (Chapter 16); and GIS-based emergency management (Chapter 17). However, there is a degree of overlap between chapters in addressing how GIS enables participation, collaboration, and producing spatial knowledge. For example, the description of societal benefits from SDI and public access to GIS data appears repetitive across several chapters.

Public participation in decision making has been an important research area relating to GIS and society. The fifth theme of the handbook addresses specific issues of using GIS in public participation (PPGIS). It covers issues such as PPGIS design (Chapter 18), online PPGIS and e-government for spatial planning (Chapter 19), participatory approaches and group decision making (Chapter 19), and PPGIS in planning practice (Chapter 20). PPGIS is motivated by concerns raised in early GIS and society critiques about the potential exclusion of people and groups from technologies and from participation processes. Its methodological developments, in turn, have fostered a diverse array of interventions and research, promoting and studying the use of PPGIS.

The last theme focuses on other challenging issues that connect GIS and society, including determining the value of GIS (Chapter 23), GIS representation of spatial equity (Chapter 24), the assessment of GIS in conflict management (Chapter 25), and legal and ethical issues associated with GIS (Chapter 26). The theme highlights a continuing need to enhance society's ability to handle those problems (e.g., privacy and intellectual property) that should involve a broader discussion among geographic information scientists, geographers, and legal scholars and new research to address those challenges.

In general, the emphasis of the book is more on the social science examples and case studies than on GIS technology, which makes it not particularly relevant to readers with a technical focus. The handbook includes numerous examples of GIS services provided to individuals, groups, organisations, and communities as well as of those provided to applied fields such as planning, emergency management, and the environmental and health sciences. All chapters are designed carefully and tailored smoothly within specific themes to show how GIS and information technologies foster our understanding of different spatial phenomena in modern society. A wide range of references are used detailing the sources of particular concepts, methodologies, and applications. Many of those are very valuable for users seeking further resources on issues that are

not covered in the main text of the book. A minor limitation that I have noted is that in some chapters, there are insufficient examples to address the reverse relationship between GIS and society, i.e., how GIS development is shaped and influenced by current social, structural, and political applications. Given one intention of this handbook is to explore the extent of the two-way relationship between GIS and society; this is yet to be fully explored.

Overall, I would say this is a very comprehensive and multidisciplinary handbook that suits a broad range of users including researchers, postgraduates, practicing professionals in the fields of geography, sociology, planning, information systems, and computer science, and those with an interest in applying GIS to societal issues.