

# Introduction to the Special Issues on Access and Participatory Approaches in Using Geographic Information

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Access issues and participatory approaches in using geographic information have been persistent and growing areas of research focus across the globe over the past decade. The proliferation of spatial technologies, growth of geographic databases, pervasive use of the web, and expanding use of mobile communication networks are providing exciting opportunities for increasing personal access to virtual and physical resources and enabling broader participation in decision making. Yet these same changes are exacerbating existing social inequities and giving rise to new access problems.

There are at least two major research themes in addressing issues of “access” within the geographic information science (GIS) research community. The first involves spatial concepts and theories that relate to access to goods and services generally. The second involves the notion of access to geographic information as a source of wealth and power.

Over time, geographers have developed theories about the way individuals and aggregates of individuals respond to the constraints of time, cost, and effort in order to gain access to work, shopping, recreation, and other spatially distributed activity opportunities. Many of the models developed from these theories have been very useful. However, the nature of accessibility is changing as many goods and services may be accessed without recourse to physical movement. Information, in combination with the infrastructure that carries it, is a new and expanding resource that often replaces labor, capital, and physical resources. Access to physical space can be replaced or complemented by access to virtual space in which traditional notions of distance, nearness, and spatial interaction lose meaning or, at the very least, must be reassessed. In virtual environments the activities appear to be more people-based than place-based. Where you physically are may become less and less an indicator of what you may be doing. Thus, the traditional assumption of a strong correlation between place and activity upon which many geographic models have been based often may be unwarranted in virtual space.

The second primary research theme focuses on access as a basis of wealth and power in society and addresses societal issues such as equity, ownership, and control. Those active in this research domain argue that the foundations of legal rights of citizens and scientists to access information are being undermined as we move into networked digital data environments. Thus, researchers focused in this arena believe it is important to identify the processes by which losses in access are occurring, publicize that the losses are occurring, explore alternatives for halting or reversing the losses, and investigate models for expanding access or providing more equitable access. There is also a need to observe society in action through assessment of the impact of evolving policy and legal trends on access to scientific and technical data generally and geographic data specifically.

Closely affiliated with concepts of access is the concept of participation. Geographic information technologies are seen alternatively as tools that empower communities versus tools that invasively advantage some people and organizations while marginalizing others. Public Participation GIS research efforts largely adhere to the first and more positive view and seek to develop approaches, mechanisms, technologies, and institutions that aid self-determination by various forms of self-defining communities with full awareness of the second view that choices made may have negative as well as positive power ramifications. Although consistency in definition has yet to emerge, some of the characteristics envisioned for participatory geographic information technologies have included: 1) emphasis on the role of participants in creation and evaluation of data; 2) accommodation of equitable representation of diverse views, preserving contradiction, inconsistencies, and disputes against premature resolution; 3) system outputs redefined to reflect the standards and goals of the participants; 4) capabilities for managing and integrating all data components and participant contributions from one interface – technologically sophisticated but easy to use; 5) preservation and representation of the history of its own development and be

more capable of handling time components than existing GIS, and 6) embedment of the condition that “Public Participation GIS” is not primarily enabling technology focused but is primarily an ongoing “process” of self-determination by self-defining communities.

In the Fall of 2001, a workshop with participation by United States and European researchers was held in Spoleto, Italy to assess the current state of research on access to geographic information and on geographic access theory, to evaluate the impact of evolving policy and legal trends in the U.S. and Europe on access to scientific and technical data generally and geographic data specifically, to assess the current state of research on participatory approaches surrounding the use of geographic information, to explore commonalities and differences in U.S. and European directions of research within these arenas, and to develop a joint U.S./European research agenda on geographic information access and participatory issues.

The idea for a “Workshop on Access and Participatory Approaches in Using Geographic Information” arose from research discussions among university members of the University Consortium for Geographic Information Science (UCGIS) and the Association of Geographic Information Laboratories in Europe (AGILE). The articles in this first and a second special issue of the URISA Journal arose from papers presented at the Spoleto Workshop as well as from a subsequent call for papers on the topics of the Workshop. The Workshop was jointly funded by the National Science Foundation and the European Science Foundation, and the final report from the Workshop is contained in the second special issue.

## Special Issue I

We begin the issue with three articles focused on methodological and research framework issues. Next we present an article that explores a framework for considering accessibility in the context of evolving technology and social structures. This is followed by two articles that pursue a survey approach in exploring access issues. Finally, we present two articles that focus on participatory experiences in geographic information technology settings.

To establish a context for research on geographic information-supported participatory decision-making, Piotr Jankowski and Timothy Nyerges explore the multiple constructs of participatory situations and highlight how models of participatory situations can help organize our understanding of participatory settings in the use of GIS. The authors present a framework for comparing participatory GIS models. Eighteen empirical research strategies are compared to each other, and the authors suggest circumstances under which each strategy might contribute to empirical investigations of participatory GIS use activities. They urge systematic comparisons by the research community in order to gain an overall sense of how and under what circumstances a participation model might be more beneficial than others in terms of efficiency, effectiveness, and equity, and to gain an understand-

ing of how the costs of different models structure participant interaction. The power of their framework is in linking premises with research questions and testable hypotheses and the empirical testing of the hypotheses. This may lead to verification of the theoretical framework and therefore a logical basis upon which to base guidelines for designing and using geographic information technologies in participatory decision making.

The development of spatial data-sharing cultures is important to the successful implementation of geographic information technologies among and within user groups and to the advancement of GIS generally. After reviewing several theoretical models of decision-making, Uta Wehn de Montalvo demonstrates in her article that the theory of planned behavior drawn from the field of social psychology can be fruitful as an organizing principle for research into spatial data sharing. That is, the theory has been used successfully in identifying in a systematic fashion the incentives and disincentives that determine the intention of key individuals within an organization to share spatial data. Results of her empirical work are presented. The author suggests that the strength of the approach is in identifying context-specific incentives and disincentives to spatial data sharing which in turn may provide a basis for policy makers in achieving desired sharing behaviors.

The third article by W.H. Eric de Man is yet another that draws on theories from other scholarly domains to explore access and participatory processes in geographic information settings. Approaches are needed to describe and analyze the predominant cultural conditions affecting access to and participation in the use of geographic information. This article introduces two existing models used to describe and compare different cultures, namely the approaches of Geert Hofstede and Mary Douglas. Because access to and use of geographic information are embedded within the culture and institutional arrangements of a host society, the author argues that cultural and institutional values and factors must often be accounted for in order to more completely explain and identify resistance or non-resistance to particular approaches to sharing or using spatial data.

Many of the accessibility models developed over time by scholars have been very useful for understanding how people are related spatially to their economic and social activities. This understanding has improved the quality of life of communities by enabling better planning and design of land development activities, transportation systems, and preservation projects. However, the previous models and inputs to those models need to be reassessed in the light of different ways that people now communicate, learn, work, and conduct commerce brought about by the Internet. Sarah Niles and Susan Hanson illustrate numerous ways that grounded geographies mark cyberspace and examine the intersection of people’s use of information technology and grounded socio-spatial relations. They argue and present evidence that physical access to the Internet closely resembles pre-Internet spatial patterns of access to goods and services. Their examples illustrate how the social context in which online material is produced and consumed can greatly affect the accessibility of that information.

Although insufficient by itself, access to spatial data is a necessary precondition to be able to engage meaningfully in decision making that depends on or could be affected by such data. Across the globe, various actors have been engaged in making spatial data available to others through the establishment of a system of clearinghouse nodes. Sometimes, the nodes provide access to metadata so that others may know that specific spatial data exist while other nodes provide online access to actual spatial data. Joep Crompvoets and Arnold Bregt accomplished a survey of the status of such nodes in December of 2001. Their survey shows that nodes had been established in 59 countries as of that point in time. Their article also highlights differences in the use, content, and management of various nodes across the globe.

An article by Max Craglia and Ian Masser next addresses issues of access to spatial data from a European perspective. They review recent policy and legislative developments in Europe and identify three main strands of research on access to geographic information that they believe deserve concerted effort by the research community in Europe. In brief, the strands include a focus on the role of governments in developing frameworks for sharing spatial information, a focus on the organizational level, and a focus on regulatory frameworks in national and trans-national contexts such as those that seek to protect intellectual property rights while promoting wider access and use of geographic information.

The article by Steve Carver focuses on participatory approaches using geographic information. It pays initial attention to general theories of participation and empowerment before examining the role of geographic information in providing a framework for active public participation. The author reviews

the current use of geographic information to facilitate involvement in decision making and then explores factors working against or for use of geographic information and technologies in communal decision-making. A research agenda is outlined for building on strengths, addressing weaknesses, exploring opportunities, and neutralizing threats in the use of geographic information technologies in participatory processes.

Specific groups are often tasked through legislation or other authority to make decisions affecting large segments of the population. Transparency in the data and processes used in such decision making is very important when the uncertainties of following particular courses of action may be high or the potential negative effects of decisions may be severe or widespread. Geographic information and Internet technologies may be used as positive tools in increasing the transparency of decisions. In an article by Christina Drew, an example is detailed of how increased transparency was facilitated through the use of a geographic information system and the Internet. The example illustrates the complexity and challenges of measuring decision transparency and highlights the need for research and methodological development focused on such measures.

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