

Workshop on Access to Geographic Information and Participatory Approaches in Using Geographic Information

Report of Meeting and Research Agenda

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Introduction

The continuing rapid diffusion of geographic information technologies throughout societal applications and the growing pervasiveness of geographic and location data use in our communities has spurred diverse notions in the scientific community concerning priorities for research and the nature of appropriate research. This divergence in thinking is particularly noticeable in comparing “GIS and Society” research agendas in the U.S. versus those in Europe (see GIScience Research Agendas). How European nations and Europe as a whole are responding to the expanded use of geographic information by individuals, businesses, government agencies, and scientists varies substantially from the responses witnessed in the U.S. Laws and policies regarding the handling of scientific, technical, business, personal and government data are very different across the Atlantic and these differences are influencing both technical and social science research directions in the field.

Divergence in research directions is not necessarily bad and in fact may be highly beneficial in exposing new findings. However, at a time of increased expansion in global information networks along with increased communications and transactions across those networks, the growing gaps in U.S. versus European approaches to data handling are a matter of concern. Differences in societal approaches have given rise to a divergence in “GIS and Society” research suggesting a need to renew efforts in the cross-fertilization of links between U.S. and European researchers. These communities need to inform each other in detail about the underlying influences affecting the directions of research and the different paths being taken.

With these considerations in mind, this workshop was organized by the Association for Geographic Information Laboratories (AGILE) and the University Consortium for Geographic Information Science (UCGIS) with the financial support of the European Science Foundation (ESF) and the National Science Foundation (NSF). The Workshop was held in Spoleto, Italy, 5-9th December 2001 with 29 scholars coming in equal share from the US and Eu-

rope (See Section 6 for the list of participants). The papers presented at the workshop are available online (See www.shef.ac.uk/~scgisa/spoleto/workshop.htm).

Objectives of the Workshop

The workshop addressed research directions, priorities and progress under two major themes: a) Access to Geographic Information and b) Participatory Approaches in Using Geographic Information. Within the context of both of these themes our objectives included providing cross-fertilization of research ideas and experiences, building an international person-to-person community of science, and developing to the extent possible joint U.S./European research agendas.

Several points made a compelling case for an international workshop addressing these issues at the time.

- Published research agendas and actual research activities have diverged across the Atlantic in the “GIS and Society” domain as scientists have responded to the differing priorities of their respective societies as reflected in the divergent and unsettled information laws, policies and practices being followed on their respective continents.
- Because our nations and communities are currently struggling with means and methods for providing access and participation in a time of rapid technological change and are committing substantial resources towards specific solutions, there is a critical need for dialogue among researchers to assess and critique the choice of decisions being made.
- Organizations with broad and inclusive research university constituencies recently have formed on each side of the Atlantic (UCGIS and AGILE) and there is an immediate need to forge initial and continuing links between the large research community constituencies that these organizations represent.



Spoleto Workshop Participants

The two major themes of the workshop are discussed more specifically in the next section .

Access to Geographic Information

There are three major strands in addressing issues of “access” that we wished to pursue. The first relates to the role of governments, at international, national, and local levels in conceptualizing and implementing access to information. This includes regulatory frameworks such as Freedom of Information legislation, definition of different typologies of information and users, the supporting business models necessary to ensure sustainable implementations, and the development of the infrastructure necessary to deliver the information. Such infrastructure includes not only physical artifacts, but more crucially organizational practices for data documentation, storage, and retrieval, and the knowledge infrastructure necessary to ensure usability (Burrough et al. 1997). Recent research (Craglia et al. 1999) indicates that a wide range of approaches exist in conceptualizing public sector information which in turn lead to different roles taken by governments and public sector organization in respect to its dissemination (Masser 1998). This raises not only important research questions on the social construction of geographic information and related technologies within organizational context, but also major policy issues on the role of information access in supporting and promoting scientific advancement (Newby et al. 1992, Borgman and Früwald 1997).

The second strand 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, investigate models for expanding access or providing more equitable access, and assessing the measurable dimensions of information wealth and poverty, and growing disparities, including

differential geographies of information exclusion (Harris and Weiner, 1996, Craig et al. 1999).

The third strand looks at the concept of accessibility to goods and services in respect to the evolving relationships between physical, social, and information space. 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 physical resources, labor, and capital. 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 least, must be reassessed. In virtual environments activities appear to be more people-based than place-based. Where you physically are is becoming less and less

of 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 is often unwarranted in virtual environments (Janelle and Hodge 1998).

There is a need to explore commonalities and differences in social, economic and legal treatment of access to geographic information in U.S., European, and international contexts and to become informed about how those commonalities and differences are affecting research directions in our respective regions of concern. As a general rule, laws in the U.S. allow greater access to government information at the local, state, and national government levels and use of that information than is generally allowed in the nations of Europe. As a further generalization, U.S. law grants individuals greater leeway to use and build upon the work products of others without permission than is granted by the laws of European nations. Perhaps as a result, European researchers appear to be directing more concerted effort into the first and second of these strands while researchers in the U.S. appear to be more focused on the second and third strands.

Participatory Approaches in Using Geographic Information

While the first theme of the workshop looked at various dimensions of access to geographic information, the second questioned the extent to which increased access will necessarily lead to increased participation of the public in democratic and policy processes. This research theme goes at the heart of an important debate on the role of information-based technologies in the social sciences (Craglia 1999). Geographic information technologies in particular are alternatively seen as “tools” with potential for empowering communities or “social practices” that invasively advantage some people and organizations while marginalizing others. Public participation GIS research efforts in the U.S. largely adhere to the first and more positive view and seek to develop approaches, mechanisms, technologies, and institutions that aid self-determination with full awareness of the second view that choices made may have negative as well as positive power ramifications (Craig et al. 1999, Harris

and Weiner 1996). In Europe, a cohesive body of researchers working on participatory GIS has not emerged to the same extent as in the U.S., and research on participatory issues has been carried out in different disciplines and scientific communities, often only peripherally linked to the geographic information community. The meeting offered therefore an opportunity to bring together leading researchers from these diverse traditions to assess the current state of research and activities on both continents relating to the participatory models being advanced in the domain of decision-making involving geographic information.

Workshop Findings

The following findings were developed through a series of small group and plenary workshop sessions held over a period of several days.

Access to Geographic Information

The discussions held at the meeting indicate a considerable degree of consensus on a number of key issues. As a starting point there is a general recognition that access to geographic information has to be seen in the broader context of access to electronic information by citizens, organized groups, businesses, and government agencies. Although some aspects may be specific to the geographic dimension of the information treated, such as the complexity of interpretation, the majority of issues are not. Geographic information therefore provides a convenient focus with which to explore sets of issues that are of generic interest to society and social science research at the beginning of the 21st century.

The second important aspect is that access to information is not just about physical or technological access, i.e. availability of a computer and modem, but includes at least two other dimensions. The first dimension is social access or the extent to which socially-grounded relations affect the opportunity and ability to have access to information, and the extent to which, having accessed the information, the user is able to interpret it and “use” it for whatever purpose. Following from this is the dimension of power or the extent to which users have the necessary power in the social and political arena to harness the information available to effect change.

Having embedded the concept of access in its social and political context, it is also clear that governments, at both local and central level, have an enormously important role in setting the framework within which matters relating to access to information play out. There is an additional specific geographic information dimension to this aspect as geographic information is often recognized as having an important economic value, and hence it is an arena in which social and economic objectives are often in conflict, and governments are asked to mediate between them.

The final generic point emerging from the discussion is that there is a need to develop a robust methodological framework for access-related research, anchored in sound theory, particularly when addressing multi-cultural, multi-national research questions.

With these considerations in mind, the research agenda developed at the workshop can be structured under three broad headings, as illustrated below.

Institutional and Organizational Issues

Under this heading there are three main areas of research:

- i) What is the influence of national, sub-national and professional cultures on approaches to data access and sharing? This is probably best analyzed through a series of comparative case-studies drawing for example on the theoretical frameworks put forward by scholars such as Hofstede. This line of research provides the overall background to the following areas.
- ii) What is the role of governments in developing spatial data infrastructures and their impacts on the accessibility and use of geographic information? Here again a series of comparative case-studies should be developed with common methodology, and with particular attention given to the changes that these initiatives are going through, as well as the relationships with the overall institutional and cultural context. The analysis of change should consider technology-driven, socially-driven and politically-driven change (or lack of), and, based on this analysis, provide an opportunity for the development and systematic exploration of scenarios of possible futures to try and steer away from undesirable change.
- iii) What is the role of individual and organizational behavior in shaping the conditions for the provision of access to data? To investigate this set of issues a two pronged approach is suggested: the first would include a series of comparative case-studies of organizational change in government to meet the challenges of the Information Society including the exploration of the influence of organizational cultures. The second approach, is to draw on decision-making research and social psychology, for example the Theory of Planned Behavior, to focus on the regional and organizational differences in the perceptions of incentives and disincentives to spatial data sharing, and provide a basis for analyzing how the motivations to engage in spatial data sharing change over time.

Legal and Economic Issues

This heading includes the exploration of the following research questions:

How can the public domain of spatial data be preserved and expanded in support of democratic principles, economic vitality, and the advancement of science? In particular what are the defining dimensions in preserving and expanding the public domain in terms of spatial data ownership, personal privacy, data security, data reliability, liability, government data access policies, trust relationships, and economic approaches? Being informed by those dimensions or limits, what combined legal, technological, and institutional models might expand or provide more meaningful access for the public to spatial data and services? How can these models be used to reconcile the interests of public, private, corporate, and governments in the sustainable use of spatial data?

To address these issues there is need for a combination of surveys and comparative studies monitoring the evolution of both economic and legal frameworks and their impacts on the provision of spatial data through a variety of regimes: public domain, dissemination costs, market costs.

The evolving nature of policy frameworks for access needs careful monitoring and evaluation. In particular, we are seeing an emerging trend towards the regulation of public sector bodies in Europe, together with legislation on human rights, freedom of information and data protection. The impacts of these developments on the availability of spatial data can be usefully benchmarked against developments in the US. Further, comparison of information law and economic policies and their impacts among the different States in Europe as well as among the different States in the US are fertile ground for comparative studies.

The analysis of impacts needs also a much better understanding of the development of the market for geographic information products and services. The role of government versus the role of the commercial sector in the provisioning of geographic data and services is a critically important question begging investigation by the research community. Intermediaries and value-adders are taking an increasingly prominent role and many actors are in a fuzzy zone between private and public sector. As current statistical classifications are inadequate in capturing the size and evolution of this sector, and more generically of the digital content sector, there is a need to work closely with international organizations (OECD, EU) and statistical offices in the US and Europe to develop an appropriate framework for analyzing the emerging value adder market.

Closely related to the analysis of this market, there is a need to study current and evolving business models for geographic information. The regulatory frameworks and models of public good companies (utilities) may provide a useful starting point for analysis.

Finally, there is a need to develop measures of impacts of data access and sharing that go beyond the economic value, and focus specifically on social processes, with particular attention paid to loss of privacy, increased social exclusion, and loss of human rights versus increase in corporate rights over proprietary control in data. What is an appropriate framework to measure such impacts? Can indicators be developed that are robustly anchored to theory?

Geographies of Access

This line of enquiry needs to focus on the impact of socially grounded relationships on access to data (in all its facets) as well as the reverse perspective, i.e. how access to data can affect grounded spatial decision making and spatial behavior. There are at least three levels at which these impacts can be explored.

- i) There is the level of the individual or small communities of interest and their relationships with their surrounding social and economic environment, which affect their ability to access, interpret, and use geographic information effectively. Current debates on information haves and have-nots or electronic inclusion are clearly part of this strand.

- ii) A second level pertains to the social relationships between organizations which affect the perceived reliability, and sense of trust of the “other” and hence the extent and nature of approaches to sharing data or providing access to data.
- iii) The third level is more geographic in character in that it can analyze the urban-rural dimension of access. There is already plenty of evidence that centers of power in the “traditional economy” are being maintained in the information economy. Hence cities remain the privileged locus of access, learning, and economic activity in the Information Society. How can these frameworks be altered to distribute more evenly the potential benefits accruing from increased access to information? How may individuals or institutions redefine and expand the social footprint within which access issues are played out? Again comparative case studies may be the most productive way to address these complex issues, which require depth of analysis rather than breadth of coverage.

Participatory Approaches in Using Geographic Information

The research concern with participatory approaches in using geographic information is a reflection of the increasing effort in society to move the use of GIS beyond the exclusive domain of technical and professional elites towards more inclusive use by non-government organizations and the public. The participants at the workshop recognised that the issues involved in participatory approaches span across several dimensions, including different notions of public participation, ways in which “the public” uses geographic information (including paper maps), the contribution of information and communication technologies to public participation, and finally the use of GIS for public participation. For this reason, the broader heading of Participatory Approaches in Using Geographic Information was chosen for this meeting rather than the more commonly used term of Public Participation GIS (PPGIS). With this in mind, the findings of the discussions are grouped under three broad categories: research support structures, participation and technology intersections, and theoretical issues.

Research Support Structures

In spite of the growing use of geographic information for public participation in a variety of policy settings on both sides of the Atlantic, they often tend, for their very nature, to be very localized one-off projects with little monitoring over time of subsequent developments and impacts. Hence there is a need to develop a better understanding of these efforts and appropriate frameworks for their evaluation. Two areas are of immediate concern.

The first is the need to collect and critically evaluate the dispersed materials that researchers have been producing on this subject over the past twenty years. Bibliographic references, lists of contacts and dedicated websites are all useful elements that need to be developed further.

Refereed work offers an opportunity for this material to be presented for general consumption in the academic community.

However, the nature of the subject involves many stakeholders from non-academic backgrounds (including practitioners, voluntary sector workers and citizens/communities) who would benefit from seeing how projects have been conducted. It is therefore important that a dedicated website (or linked collection of sites) includes easily understood versions of descriptions (from science, practice and the 'expert' contributions from the community) and a place where 'works-in-progress' can be presented to further actors' understanding. This issue of recording the development of activities relates to the second area of concern.

There is clear need to develop a methodological framework for monitoring and evaluating participatory geographic information projects. Given the varied nature of those involved in participatory activities there is a need to pay particular attention to the social, political, technological and geographical context of projects and how such projects reflect on the theoretical understanding of technological development and practice. Such framework is particularly important to carry out comparative trans-national work, and needs developing with contributions from all the disciplines engaged in participatory activities and cross-national comparative evaluations. Moreover, the contributions must include, not only academia but also practitioners, users, and the many organizations in both public and private sector involved in delivering spatial information to citizens for decision-making purposes and the procurement of project funding. Eliciting such contributions requires dedicated workshops and conferences in which face-to-face interactions and networking can be developed. The meeting in Spoleto was a first important step to bring together researchers from both sides of the Atlantic, which needs to be built upon and developed further with participation from numerous other stakeholders.

Participation and Technology Intersections

There are three main areas of research suggested by the workshop participants under this heading.

i) Research is required on the extent to which the process of participation and the output of such activity contributes to developing the users' understanding of issues/debates, and what role geographic information and technology can play in influencing users' understandings. It is important to recognize that different understandings of participation and technology will influence the activities that take place. For example, actors may have different views of what the technology can be used for as well as the purpose of any consultation exercise, as participation is conditioned by multiple contexts (cultural, social, political and technological by specific problem domains). Examining prevalent normative managerial models of decision processes could help to map out these views. Having examined the constraints of such models (for example- culture, education, political circumstances, values or technological infrastructure) it may be possible to develop new models of public participation decision processes, which can guide the selection of appropriate decision support methods and tools.

- ii) A second area of research should consider how different communities represent their 'spatial stories' using geographic information, and the contribution to such representations of existing technologies like groupware, 3D GIS, and virtual environments. This needs also to reflect the limitations of technology and of current metaphors and information structures for representing local knowledge. As an example, participants may choose to express their views in ways (qualitative, fuzzy) that a traditional Geographic Information System cannot readily handle. It is likely that in the future spatial multimedia will play a significant role but what techniques can be developed that can help capture this information to allow researchers/mediators to include non-traditional forms of expression for the purposes of display and analysis during a participatory exercise? It is paramount that when exploring this issue that users are made aware of what is happening to their ideas in ways that they can comprehend, and not present a barrier to participation that is appropriate for the activity they are engaged in.
- iii) The third area of research should explore geographic information technology-based learning environments for public participation. This is partly an issue of observing human-computer interaction in the context participatory projects as well as the process of learning a "geographic language" for non-experts. These issues can be explored through a number of approaches ranging from (a) qualitative research into users attitudes to (b) the way they are taught and use geographic information and related technologies to (c) more mainstream psychological/behavioral/cognitive experiments and recording methods. Cultural differences in approaches and interactions to space and technology need systematic evaluation through comparative methodologies in international settings.

Theoretical Issues

Developing a strong theoretical framework for researching participatory approaches using geographic information requires the contribution of many different disciplines. Three areas in particular were identified as priority for action:

- i) There is a strong need to develop more formal models of the interrelationships between access to information and public participation. Alongside community specification of the issues they see as critical, access to information is the starting point of many participatory activities, with local information and local issues, in particular, readily adopted and understood by citizens/users. Whilst there are major policy initiatives to increase access to information, what differences do they make to participatory activities? What information is critical? And "whose" information?
- ii) The nature and forms of public participation need also to be more clearly articulated. Public participation is not a unique and shared construct. It is a complicated process with multiple meanings that lead to numerous expectations. It is important to explore how various actors involved in participatory approaches in using geographic information conceptualize and

define their views of public participation. Similarly, there is a need to explore and explain the processes of empowerment and marginalization that can occur with the application of any vehicle for public participation, such as the Internet or GIS. A corollary of this is to determine what “empowerment” or “marginalization” mean in the context of information and communication technologies and GIS.

- iii) The issue of “jumping scale” needs particular attention in participatory approaches. Examples exist of participatory initiatives contributing to more global debates outside of the immediate context of the issue that participants may initially find themselves. In both the US and Europe, there is an increasing interest in the connection between local understanding and regional decision-making. There is also an issue about locally-based information contributing to more strategic decision-making, as seen through the increasing number of environmental policy initiatives being developed in Europe or the dependence on local data for building the National Spatial Data Infrastructure in the US. Additionally, an issue that would appear as an isolated example can gain importance if it is found to be relevant or replicated elsewhere. Sharing information about participatory activities and issues emerging therein have impacts that go beyond the purely research arena and affect policy and advocacy.

Concluding Remarks

The three priority areas of research outlined above under Access to Geographic Information and the three priority areas outlined under Participatory Approaches in Using Geographic Information obviously are not exclusive nor are they comprehensive. Rather, these identified areas provide facets of a research agenda of growing importance since so many untested assumptions continue to characterize current policy debates on these issues.

As indicated, it is crucial that the field has an opportunity to come together to share the many experiences that are taking place and to seek contributions from other relevant disciplines in the social sciences. At present many promising research projects are cut short or do not link to more strategic explorations of the impact of public participation and the role of space and information technology. Given the influence of access and participatory issues on local and national communities and given the nature of many of the research topics, there is a need to conduct more extensive longitudinal projects. Moreover, it is crucial to develop transnational collaboration in the design of relevant research methods so that systematic comparison and evaluation is made possible, and we truly get to a whole that is greater than the individual parts. To this end this meeting has made an important first step.

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List of Participants in the Workshop on Access to Geographic Information and Participatory Approaches in Using Geographic Information held in Spoleto, Italy, 5th-9th December 2001

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