

A Framework for the Use of Geographic Information in Participatory Community Planning and Development

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Abstract: *A group of participants in a National Science Foundation-sponsored workshop developed a framework for public participation in the use of geographic information. This article presents the framework and considers its usefulness in the context of two examples of urban indicators projects. Three questions are addressed: 1) Is the framework useful within which to consider and compare experiences among geographically based community planning projects in different urban areas? 2) Does the framework raise questions in relation to particular projects that might not otherwise be asked? and 3) Are there important issues in geographically based community planning and development that are not addressed by the framework? The author concludes that: 1) it has been possible to identify elements of the selected example projects that are present or absent, stronger or weaker, when viewed through the filter of this framework; 2) important issues surrounding the use of urban indicators in community planning may be overlooked, which the framework can help identify; and 3) the main issue not addressed by the framework is the relationship between the use of specifically geographic information and information in general.*

Introduction

In December 2001, the National Science Foundation and the European Science Foundation jointly sponsored a workshop titled "Access and Participatory Approaches in Using Geographic Information" in Spoleto, Italy. At this workshop, a group of participants¹ developed a draft framework for comparative analysis of participatory geographic information systems (GIS) (Figure 1). The framework considers both the conditions for and the impacts of geographic information in community planning. This article describes the "Spoleto framework," using the examples of the Richmond Neighborhood Indicators (RNI) project and a sustainability indicators project in Devens, Massachusetts. These examples can be used to illustrate the framework and its potential applicability to comparative analysis of local planning projects that make use of geographic information. The following questions may be posed with regard to the framework: 1) Is it a useful framework within which to consider and compare experiences among geographically based community planning projects in different urban areas? 2) Does it raise questions in relation to particular projects that might not otherwise be asked? and 3) Are there important issues in geographically based community planning and development that are not addressed by the framework?

Richmond Neighborhood Indicators Project

In 1998, the Richmond office of the Local Initiatives Support Corporation (LISC) initiated the development of the RNI project under a contract to the Department of Urban Studies and Plan-

ning at Virginia Commonwealth University. LISC is a non-profit organization based in New York City that provides funding and services to Community Development Corporations (CDCs) and other non-profit community development organizations.

The RNI project seeks to develop a capability for the successful integration of geographic information into an ongoing long-term process of participatory community planning. The basic objectives of the RNI project include: a) to provide detailed, block-level indicators of community conditions that can be used to establish baseline measurements and subsequently to measure the impact of community investments, including those sponsored by LISC, the City of Richmond, and others; b) to develop models of the causes of current conditions and the likely effects of interventions; and c) to encourage participation by local neighborhood residents and organizations in the process of identifying relevant indicators and using them as an effective basis for neighborhood planning (Accordino and Rugg 1999).

Sustainability Indicators In Devens, Massachusetts

A recent issue of *Planners' Casebook* (Hollander 2002) described the use of indicators for community planning in Devens, Massachusetts. *Planners' Casebook* is a publication of the American Institute of Certified Planners (AICP). The approach used in Devens followed a familiar planning process. The indicators were community-wide, not geographically distributed, but the example is included because it illustrates the use of indicator data (which could be geographic) in the planning process. Also, as a result of its publication by the AICP, the process used in Devens may be

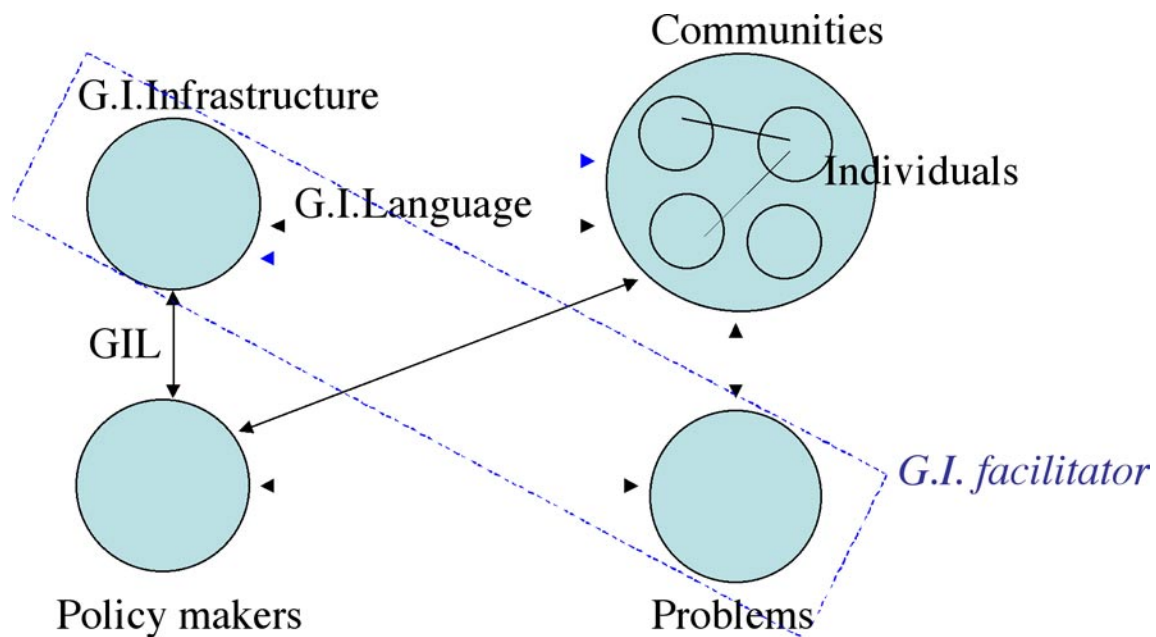


Fig. 1. Draft Framework for Participatory GIS

emulated by many professional planners in other localities.

Planners in Devens first defined the goal of “sustainability” with input from “several planning studies, a charrette, and published regulations” (Hollander 2002:3). A staff planner prepared a preliminary report including the definition. The next step in the process was to select a set of issues and state them as questions (e.g., “Is the economy healthy?”). The selection of issues was again done by a staff member using a literature review and the staff’s knowledge of community concerns. A third step was to construct indicators that would provide an empirical basis for answering the questions (e.g., unemployment rate as a measure of how healthy the economy is). For each indicator, a certain value was specified as the dividing line between whether the answer would be “yes” or “no.” (Mixed “yes” and “no” results for a group of related indicators would result in an answer of “maybe”.) A fourth step was to evaluate the indicators according to a number of criteria found in the literature. One important consideration for the Devens planners was the criterion of “attractiveness to the media.” A public meeting was held so that citizens could participate in evaluating the indicators, but little useful feedback was obtained, so the set of indicators was refined by the planning staff. Finally, indicator data were collected and the results published. Based on these findings, local planners recommended that the community develop an “eco-industrial park,” coincidentally, “a tool with which Devens Planning Director Peter Lowitt had extensive experience” (Hollander 2002:5). One is tempted to observe that staff bias may have played a major role in the selection of indicators, which in turn determined what the results and recommended action would be.

Spoletto Framework

The “Spoletto framework” emphasizes the intermediary role of geographic information and its interpretation in processes that basically involve policy makers addressing problems affecting individuals living in communities. Within this framework there is an infrastructure of geographic information that may or may not be well understood by policy makers or the affected individuals. The infrastructure itself may help identify or provide information about neighborhood problems and their solutions. It may include predictive models or scenario-building techniques that can help forecast the effects of policy decisions on the quality of life of urban residents. The geographic information infrastructure includes language that may require a role for a geographic information “facilitator” to help with communication between policy makers and communities about local conditions and opportunities, viewed geographically.

The Spoletto group that proposed this framework saw it as a way of grouping and generalizing about the otherwise disparate case studies of experiences with urban indicators in various American cities. This article reviews the experience of the RNI and the Devens project in light of this framework as a way to explore the usefulness of the framework in organizing thinking about community planning based on geographic information.

Individuals in Communities

This part of the framework illustrates that communities are made up of individual residents interacting with one another as well as with another group labeled “policy makers.” This is an idealized view of the situation. In practice, communities are represented partially and unevenly by a variety of community organizations.

In particular for the RNI project, the main client organizations consist of Community Development Corporations. Some CDCs are based in particular neighborhoods; others have city-wide or regional target areas. CDCs tend to focus on housing needs and therefore to draw much of their input from property owners, developers, and funding organizations including local, state, and federal government agencies; they may not always represent the interests of all the residents of a given neighborhood. The situation in Richmond fits the characterization as “complex social differentiation within participant communities” (Craig et al. 2001:12).

The case study of the Devens project sheds little light on the community and less on its interaction with geographic information or decision making. An important result of the project was that “planners now have a benchmark to measure future progress” (Hollander 2002:1). Clearly the planning staff is both the producer and the consumer of indicator data in this case.

There is, of course, rich literature on the subject of individuals and their relationships to communities having little or nothing to do with the topic of geographic information (see, e.g., Kretzmann and McKnight 1993, Craig et al. 2001). It is not the intent of this article to review that literature, only to note that it is a key aspect to be considered when investigating the relationship between community planning and geographic information.

Policy Makers

As with individuals in communities, there is also rich and diverse literature devoted to urban organizational theory, policy development, and decision making. Again, it is not the purpose of this article to review that literature, only to point out that the proposed framework suggests that it is a key subject to be considered when evaluating the use of geographic information in decision-making.

Policy makers related to the RNI project include the City of Richmond and surrounding local jurisdictions, state and federal governmental agencies, and non-profit organizations including Richmond Local Initiatives Support Corporation. The latter are organized into the Richmond Community Development Association, a trade association for non-profit housing organizations.

Early in the process of developing the RNI, responsible individuals from many of these organizations were invited to participate on an ad hoc advisory committee to help identify issues and select indicators to be included. Represented were Elder Homes Corporation, Highland Park Restoration and Preservation Program, Interfaith Housing Corporation, the Richmond Better Housing Coalition, Richmond Habitat for Humanity, Richmond Neighborhood Housing Services, Southside Community Development Corporation, the Virginia Department of Housing and Community Development, and the City of Richmond (Deputy City Manager and representatives from the departments of Community Development and Police, and Richmond Public Schools), as well as LISC and Virginia Commonwealth University (VCU).

By fortuitous coincidence, the Richmond City Council decided to launch a program called “Neighborhoods in Bloom” just as the RNI project was getting underway. The RNI advisory committee became a forum for coordinating the selection of indicators that could be used both by LISC and by the city for Neighborhoods in Bloom. Under this program, the city used indicators to select neighborhoods for focused investments of resources ranging from police protection to landscaping. Currently, the same indicators are being used to measure the success of Neighborhoods in Bloom. Richmond LISC and the city have freely exchanged data from the beginning of the RNI project through the current work on the Neighborhoods in Bloom program evaluation.

Hollander described the results of the Devens project this way: “Few agencies outside of the planning department...have integrated sustainable indicators into their long-term planning processes” (2002:7). According to this account, it appears that the indicators project there was undertaken somewhat in isolation from other administrative branches of the local government, and perhaps without any involvement on the part of the legislative branch.

Problems

Neighborhood indicators can be used in a variety of ways with respect to neighborhood problems. They may be used to discover problems that were not previously perceived or to document the existence of perceived problems. They may be used as “report cards” (see, e.g., Maclaren 1996:190) to assess the current status of problems and whether the situation is getting better or worse over time. They may be used for analysis of the causes and effects of problems (Maclaren 1996:193-194, Accordino and Johnson 2000). They may be used to develop scenarios about various possible future situations under various assumptions or to predict the effects of proposed actions. They may also be used in the comparison of alternatives and the selection of a preferred alternative. The framework illustrates these uses in terms of the problems themselves and the relationships between problems and communities on the one hand and between problems and policy makers on the other hand. The framework also shows a reciprocal relationship with the geographic information infrastructure, which may be used to help define problems, analyze them, and develop proposed solutions.

There are many neighborhood problems to which geographic indicators can be usefully applied. Earlier, we mentioned the Neighborhoods in Bloom program, which is a large and multifaceted effort involving the whole range of city services. Two other examples are more localized and specific. The CDC for the Highland Park neighborhood in Richmond is working on an innovative program to provide good quality rental housing as an alternative to the traditional emphasis on subsidizing first-time home buyers. The CDC for the Oregon Hill neighborhood is concerned with gentrification. The Oregon Hill Home Improvement Corporation is contemplating a concept of making profits on gentrification in order to provide more housing assistance to

lower income neighborhood residents. The RNI project did not provide the creative inspiration for either of these local initiatives, but geographic information from the project was used to help define the nature of the problem in each case.

Problems in Devens were centered on the Devens Enterprise Zone, which was created as the result of an army base closure. The history of how the site was formerly used, combined with the exodus of jobs, led to the twin concerns of economic and environmental sustainability as the problems of interest there.

Geographic Information Infrastructure

A persistent problem in the neighborhood indicators movement is the lack of a coherent and consistent geographic information infrastructure. Commonly used sources of information include administrative data from municipalities, employment data maintained by state governments, and census data. Obtaining all the relevant data, aggregating them by block and by neighborhood to produce useful indicators, and updating the information on a routine basis are major tasks. There is typically no one organization that has the creation and maintenance of infrastructure as its mission, although there are numerous organizations that can benefit from the data once they are in place. Geographic information functions economically as a public good in this sense.

Although expensive to develop and maintain, data by themselves are not sufficient. Some authors appear to equate data with indicators and indicators with the information needed to provide planning support in urban neighborhoods. Professional planners have developed the more realistic concept of “planning support systems,” which are built upon geographic databases but also include software to model “Actors, Activities, Flows, Investments, Facilities, Regulations, Rights, Issues, Forces, Opportunities, and Constraints” (Hopkins 2001:87).

One specific but important concern in the development of the infrastructure is that of web access. There are numerous issues associated with this concern, including technical problems, privacy and intellectual property issues, as well as social aspects of accessibility, empowerment, and democratization with regard to the use of geographic information (see Carver 2001).

The RNI project has benefited from the vision and perseverance of Richmond LISC. That organization understood from the beginning that providing indicator data must be an ongoing process in order to be useful. LISC has renewed funding for the project each year since 1998, even though at times the hoped-for benefits have not been immediately apparent. After a lengthy legal discussion between LISC headquarters and the VCU legal staff, it was finally agreed that the indicators data would be provided freely to governmental and non-profit organizations, and would be provided to private entities only with the mutual consent of both parties.

It is hoped that the Devens project will continue. If it was used to help justify the creation of an eco-industrial park and if the park has been developed, it will be important to know whether the expected benefits can be documented by the same set of indicators.

Often, in such cases, there is no incentive for the planners who promoted a project to go back, afterwards, and try to determine whether the expected benefits were achieved.

Geographic Information Language

The Spoleto group conceived of a geographic information language in the broad sense of concepts and vocabulary through which geographic information constituents – individuals, communities, and policy makers – understand and make use of information provided by the geographic information infrastructure. Such communication is a two-way street because the infrastructure must somehow be informed of the information needs of its constituents, and those needs must be articulated in ways that are technically feasible for the infrastructure to support. Similarly, constituents must have a clear understanding of the information that is, and is not, provided by the infrastructure, and how to use the information effectively.

There is only a clue to this aspect of the Devens project, in the comment about the lack of useful feedback from the public meeting held to evaluate the proposed set of indicators. It seems obvious that members of the public, even if they could be persuaded to attend such a meeting, would defer to planning professionals whom they would perceive to be more knowledgeable, both about the indicators themselves and about the criteria presented by these same experts as a basis for evaluating the indicators.

With regard to the RNI project, the development of geographic information language is very much a work in progress. During the first year of the project, community organizations did participate actively in the selection of indicators to be obtained. During the same year, all of the LISC staff were given GIS software training. Our naïve assumption was that the role of VCU faculty and students would diminish over time, the LISC staff would learn to use the system, and they would work directly with CDCs to develop community plans based on the newly available set of indicators. As it turned out, the expensive software training was immediately forgotten. LISC has requested ongoing support from VCU planning interns who spend a fixed number of hours per week in the LISC office, operating the system and handling requests for assistance from CDCs. The planned next step (after LISC staff became fluent in the geographic information language) was to go out to CDCs and other community organizations and provide the same kind of training to them, eventually decentralizing the infrastructure to make it locally available for direct use by each CDC in its own neighborhood or target area. That has become a far-off and now admittedly an unattainable dream.

Meanwhile, the framework provides a partial answer in the role of a geographic information facilitator.

Geographic Information Facilitator

The Spoleto group conceived of the role of geographic information facilitator as a necessary bridge between the geographic information infrastructure and the problems confronting communities and policy makers. Perhaps in an ideal future, the concept

of “naïve geography” as applied to software development will reduce the need for such an intermediary, as may improvements in geographic education of the general public. For the present, there is an inevitable gap between the geographic information infrastructure and those who know how to develop and use it, and the constituents who stand to gain the most from its use. The term “facilitator” implies that those with expertise should be helpful, but not try to set the agenda for the identification and resolution of community problems.

Specifically for the RNI, the role of facilitator is being played by three graduate students in the VCU planning program, each working about 10 hours a week. The students are responsible for collecting and processing geographic data and for responding to requests for information from community organizations. A portion of their time each week is spent at the LISC office in order to provide LISC with more in-house expertise. Experience has shown that a passive role is not sufficient. There have been a number of presentations to the LISC board and individual CDCs over the past three years. These have generated some requests for specific data items, but to date there is little active involvement of the project team in local neighborhood planning activities and only limited use of the geographic information to support such activities. Recently, the students have initiated a series of meetings with CDCs in order to describe the information resources available and to listen to what the needs are as perceived by these organizations. They are pursuing the model described by Smith and Craglia as an “advocacy” approach, “in which specialists act not just as ‘neutral technicians,’ but actively seek to exploit their knowledge for the benefit of the communities they are responsible for or are embedded within” (2001:6). A similar role is proposed by Niles and Hanson (2001) with respect to helping individuals in communities make the best use of available web-based geographic information.

Conclusion and Recommendations

The questions to be addressed include: 1) Is this a useful framework within which to consider and compare experiences among projects in different urban areas? 2) What are the specific strengths and weaknesses of the example projects when viewed in this context? and 3) Are there important issues in neighborhood planning and development that are not addressed by this framework?

Is the framework useful? The purpose envisioned for the framework was to provide a basis for comparative analysis of the then-mostly-anecdotal evidence from individual case studies of geographically based community planning projects and activities. In this article, it has been possible to identify elements that are present or absent, stronger or weaker, in the examples from Richmond and Devens, when viewed through the filter of this framework. Although there are many more examples that need to be considered, at least tentatively one could say that the framework seems to be useful in serving this purpose.

What questions does the framework raise that might not otherwise be asked? The Devens project is one of many that appear to have been undertaken in a narrow context, starting with

the assumption that having indicators is a good thing, and ending with the conclusion that it is good to be able to measure whether or not progress is being made according to these indicators and that the primary client for the effort was the planners in charge of the project. Important questions do exist with regard to how problems are defined, the role of individuals and communities in deciding which indicators to use and how, the influence or lack of influence of indicator data in policy formulation and decision making, whether a project makes specific use of geographic information and how that information relates to other information, the role of experts as facilitators, to cite just a few. These are some of the issues that might have been addressed if the author of the Devens case study had such a framework in mind.

Are there important issues not addressed by this framework? In discussing “Public Participation Geographic Information Science” futures, Craig et al. (2001) identified the following trends: increasing use of the Internet, social differentiation within communities, the use of other technologies besides GIS, empowerment and disempowerment, and the democratization of spatial decision making. The issues of social differentiation, empowerment, and democratization of decision making all fall within the scope of the policy makers and communities parts of the framework.

The trend toward increasing use of the Internet was initially assumed by American participants at the Spoleto workshop, but surprisingly it was not accepted as a given by the European participants, who noted that cell phone technology is progressing rapidly and beginning to serve some of the same functions provided in the United States by the Internet. Cell phone use is growing rapidly in every part of the world, including developing countries (see Craglia and Masser 2001). It is conceivable that the geographic information infrastructure of the future may not be web-based but cell-based. This is not an inherent limitation of the framework because the concept of infrastructure accommodates both modalities as well as any future alternative.

The trend noted by Craig et al. of a future emphasis on non-GIS technologies is something outside the scope of the Spoleto Framework. It could be included with a minor revision, replacing geographic information infrastructure with information infrastructure in general, of which geographic information is one component. Another approach is suggested by De Man (2001:4), who sees “other information sources” as being provided completely outside the realm of a “public participation geographic information system.” Either way, such a change would accommodate the non-geographic information aspect of examples such as the Devens project, and invite comparison between community planning projects that include a geographic information component and those that do not.

About the Author

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Footnotes

- 1 Members of this "public access" break-out group included: Mario Boffi (Italy); Erik de Man (Netherlands); Steve Carver (United Kingdom); Christina Drew, Melinda Laituri, Margrete Merrick, Laxmi Ramasubramanian, and Robert Rugg (United States); and Franco Vico (Italy). The interpretation of the details of the framework is the author's own and may not accurately reflect the views of other workshop partici-