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FINAL DRAFT

Understanding the Breadth and Depth of PPGIS Supply

David S. Sawicki
Professor
City Planning and Public Policy
Georgia Tech
Atlanta, GA 30332-0155
404-894-0569 (o)
404-894-1628 (f)
david.sawicki@arch.gatech.edu

D. Randy Peterman
Ph.D. Candidate
City Planning Program
Georgia Tech
Atlanta, GA 30332-0155
404-894-2350 (o)
david.peterman@arch.gatech.edu

Abstract

Many of the key themes slated for the October Varenus specialist meeting revolved around knowing who produces and who consumes small area GIS products. Examples include "the multiple ways in which PPGIS are being designed and implemented," and "identifying community information needs and how PPGIS might contribute to those needs." However, many of the questions that were posed are difficult to answer because we did not have comprehensive inventories of either PPGIS providers or consumers. Two exceptions are Craig's inventory of consumers (community groups) in the Twin Cities, and the Urban Institute's 1996 list of 30 citywide neighborhood data providers. Neither is comprehensive, nor were they meant to be. However, they did provide a start.

In this paper we provide a definition of PPGIS that follows from previous discussions, and then report the results of our search for PPGIS providers. Along the way we elaborate on the PPGIS definition using information gained from the survey, and discuss lessons learned from those responding.

A list of PPGIS suppliers is provided in Appendix 1. Since the list continues to grow, we plan to post updated lists of PPGIS suppliers, along with their responses to our survey, on the PPGIS website.

The Genesis of Project Varenus and the PPGIS Initiative

Project Varenus

In the late 1980s the National Science Foundation established the US National Center for Geographic Information and Analysis (NCGIA). NCGIA's original mandate was to make possible more widespread use of geographic information technology. In the mid-1990s, the NCGIA adopted a new goal, "to advance geographic information science through basic research, education and outreach." (Varenus: NCGIA's Project to Advance Geographic Information Science, Michael F. Goodchild, David M. Mark, Max J. Egenhofer, and Karen K. Kemp, paper prepared for the Proceedings of the Joint European Conference and Exhibition on Geographic Information, April 16-18, 1997. [1])

This new agenda, titled Project Varenus, included three areas of focus: cognitive models of geographic space, computational implementations of geographic concepts, and geographies of the information society. In this third area, the focus was on identifying "positive and negative impacts of technology on individuals, organizations and society," and examining "the new geographic structures of the information age." The agenda noted that "the use of geographic information technologies is providing to users substantial economic, legal and political advantages."

The agenda noted that the NCGIA will continue to use the "research initiative" to structure its research program. Research initiatives are multi-year multi-investigator research projects. They begin with (1) specialist meetings, where experts focus and prioritize a detailed research program, followed by (2) a period of basic research, whose outcomes are reported at workshops, seminars and in the academic literature. It was expected that each of the three focus areas would have three research initiatives.

Geographies of the Information Age

Each of the three areas of focus (also called strategic areas) was to be overseen by a panel of experts. Unlike the other two, the panel for Geographies of the Information Age was not chosen in advance. It was to be determined after an initial expert workshop, held in Santa Barbara February 28-March 1, 1997. [2] Approximately 30 experts attended this meeting, to help specify the research themes for this strategic area prior to selecting a panel. At the meeting, eight themes were chosen. [3] Subsequent to the meeting, a panel was named: Eric Sheppard, Chair; Helen Coucleis (UCSB); J.W.

Harrington, (U of Washington); Harlan Onsrud (U of Maine); and John Goddard (Univ. of Newcastle upon Tyne., UK). Goddard resigned in November of 1997.

Reviewing the suggested themes from the expert meeting, the panel chose two topics, and several candidates for a third topic. In subsequent discussions with the panels of the other strategic areas, the topic of "Public Participation in GIS" was selected from the candidates as the third topic.

Public Participation in GIS

This topic was one in which research interest already existed. It had already surfaced in the NCGIA's Research Initiative 19, begun before the development of the Project Varenus proposal. Initiative 19's title is "The Social Implications of How People, Space, and Environment are Represented in GIS" ("GIS and Society" for short). The specialist meeting for Initiative 19, held in March 1996 in Minnesota, identified seven topics for research, one of which was "Public Participation GIS" (PPGIS). A workshop on PPGIS was held in July 1996 at the University of Maine. [4] Since a workshop on this topic had already been held, the PPGIS panel under Project Varenus dispensed with the initial specialists' scoping meeting. Instead, they proposed "that Varenus facilitate a follow-up workshop, after URISA 1998, to bring together as broad a group of researchers as possible with the goal of refining the research agenda in this area into a proposal for external funding." (Annual Report 1997).

They also proposed an international meeting, titled "Geographic Information and Society," to be held in Minneapolis in the spring of 1999, as "the first of what is anticipated to be a biennial inter-disciplinary meeting international meeting which will report on research within the area of this panel." (Annual Report 1997)

Empowerment, Marginalization, and Public Participation GIS

At some point, the research initiative on Public Participation GIS was renamed "Empowerment, Marginalization, and Public Participation GIS." Unlike NCGIA Research Initiatives prior to Project Varenus, the Varenus Research Initiatives are not numbered, which in this case can be a bit confusing. So Initiative 19 addressed Public Participation GIS; so does the subsequent Varenus Initiative "Empowerment, Marginalization, and Public Participation GIS."

The co-leaders of this Initiative are Will Craig (U of Minnesota), Dan Weiner and Trevor Harris (both of U of West Virginia). The "follow-up workshop," also referred to as a specialist meeting was held October 14-17 1998, in Santa Barbara, California. [5]

The core planning group met in Boston on March 28, 1998 in conjunction with the annual conference of the Association of American Geographers. The group decided its primary concern was to learn from those using GIS and information technology to support the community in the decision-making process. To this end, we envisage three activities as part of this initiative:

- Identification of Major Community IT/GIS Activities Around the Country

This effort will build on an inventory completed by the Urban Institute a few years ago in its National Neighborhood Indicators Projects. It will go beyond efforts supported by local government to identify significant efforts by academic and non-governmental organizations (NGOs). This inventory was completed by a graduate student, working under the direction of the core planning group, during the summer of 1998;

- Specialist Meeting October 14-17, 1998 in Santa Barbara
- A Large Conference of Participants in Major PPGIS Activities in the summer or fall of 1999

(Empowerment, Marginalization, and Public Participation GIS: Initiative Description, available at <http://www.ncgia.ucsb.edu/varenius/ppgis/ncgia.html>; accessed June 16, 1998).

Our Definition of PPGIS

The concept we used to generate an inventory of PPGIS organizations employed the following language:

“ The Public Participation GIS effort of the National Center for Geographic Information and Analysis (NCGIA) requests your assistance in identifying significant information technology projects providing community information to community groups around the world. For more information about this project, see <http://www.ncgia.ucsb.edu/varenius/ppgis/>. Your response to this request can be either a full reply to the questionnaire below or a brief note or call to us, which we can follow up with you in more detail.

There are other surveys underway that look at the use of information technology by nonprofit organizations. This survey is broader than just nonprofit organizations, and narrower than the entire range of information technology. Our goal is to assemble an inventory of organizations that contribute to public participation in community decision-making by providing local-area data to community groups.

We are looking for organizations that:

- (a) collect demographic, administrative, environmental or other local-area databases,
- (b) do something to the data to make it more useful locally (e.g., address matching of individual records; creating customized tables), and
- (c) provide this information to local nonprofit community-based groups at low or no cost. This can include local non-profit community groups that are collecting and processing data in-house, or data "intermediaries" that process and analyze data for others ("data intermediaries" might be government offices, nonprofit groups, university-based centers, etc.).”

Our working definition generated some discussion among PPGIS participants and the following exploration of the critical dimensions of our definition benefited greatly from our exchanges with colleagues. [6] In this section we examine some of the critical dimensions of our definition and the reasons we had for employing them.

GIS and IT, or Just GIS?

Information technology is a broad term. Michael Shiffer identifies several types of "community IT" activities ("Community-Building Communications Technologies and Decision Support Systems", March 20, 1996: <http://alberti.mit.edu/projects/colloquium/summaries/shiffer-paper.html>): community networking (a sort of community e-mail listserv or community electronic bulletin board—a central information source); collaborative planning support; advocacy and evaluative mechanism (e.g., "a CD-ROM based multimedia system linked residential interviews with GIS maps of St. Louis' economic, physical and demographic characteristics in an interactive presentation that supported that city's bid for federally-based community development funding.") (Shiffer 1996: 6). Represented in this description are three divisions of "community IT" activities, with only a small note on the spatial analysis of information.

There are many sites on the World Wide Web that offer advice to nonprofit/public service organizations on making use of information technology. A glance at representative sites suggests the primary uses (so far) of information technology by nonprofits are:

- 1-Word-processing programs for report writing, newsletters
- 2-Database programs for accounting, fund-raising, volunteer management, project management, training, mailing lists
- 3-E-mail for communication
- 4-Internet access to create Web sites, disseminate information, and for research.

We decided that we were not attempting to inventory all IT activities (though that could be an interesting, tough, and rewarding task), but rather were searching for organizations with a significant spatial analysis component.

In addition, there is a question about how to define "significant spatial analysis component." Many groups may use GIS to simply display information in a spatial dimension, a task that might be done as well or better by hand. This is not necessarily a trivial activity; displaying spatial information on a map can enable viewers to see patterns that would otherwise not be apparent. But in our view, the power of GIS is in analyzing information, not merely displaying it; using a GIS system just to draw maps ignores most of its capacity. Thus the GIS component of our target organizations must include analytical capability.

Conversely, this analysis need not be expressed in maps; just as we see the real power of GIS as analyzing information, rather than just drawing maps, we feel that the presentation of data in a table or a report is still representative of spatial analysis. Nor is it critical, in our definition, that the organization even be using a GIS software program; after all, for some time people did spatial analyses by hand. The important thing is that some sort of analysis be carried out.

But by whom? The Census Bureau has long been a great source of spatial information for community organizations. Now with its use of information technology to make its data more accessible to users (e.g., the 1990 Census Lookup site), its role as a provider as well as generator of spatial data has been expanded. It also offers analysis of data via reports, though usually at the national level. Thus as a tremendous source of local-level spatial information, the Census Bureau would have to be on anyone's list of organizations promoting public participation through providing geographic information. Within our definition it collects demographic data, does something to it to make it more useful, then distributes it to community groups at low or no cost.

Of course, the Census Bureau is a special case; the primary reason for our requiring that a PPGIS organization "do something to the data to make it more useful" was to exclude the many organizations that just redistribute local-area Census data without any further analysis. Nevertheless, an argument could be made that even this sort of activity may assist community groups, by making local-area Census information even more widely available.

What Geographic Scale?

A "community GIS activity" would analyze data for what geographic scale? "Community" has many possible meanings. We take "community" in this context to be a spatial, not a social term: a relatively small, roughly defined area, populated by people who feel themselves to have something in common. We were thinking of it interchangeably with "neighborhood" and perhaps "small town." We exclude virtual communities, though we include organizations comprised of members with non-contiguous residence whose object of analysis might be a particular small place.

It is difficult to circumscribe the scale issue for other reasons. For example, regional planning agencies tend to work on large land areas--metropolitan areas. So on the face of it, their work would be excluded. But some of their work may have important implications for small areas. Thus, were they to provide residents of small neighborhoods with spatial data to be used somehow by neighborhood

residents (say in a planning process) we would want to include them. Most obviously, though, we are trying to find examples of organizations providing spatial analysis to persons who share the fate of their small place.

There is a definite urban--or perhaps, social--bias to that definition of community scale. The clearest challenge to this definition is the use of GIS by environmental groups. Environmental concerns center around natural systems rather than social systems, and many of these occur at large scale: e.g., air pollution, watersheds. To address this issue we divided our PPGIS survey into two conceptual parts. For organizations that dealt primarily with social issues, we looked for the use of social data at the local-area scale; for organizations that dealt primarily with environmental issues, we looked for the use of environmental data at the regional or smaller scale.

Demographic data is readily available at the level of standard political divisions (nation, states, counties, cities). Thus we decided that organizations that provided demographic data at other levels, whether sub-city (as in our local-area focus) or super-county (not just aggregating counties, but crossing county or even state lines), were adding something to the data.

Whose Data?

The Census Bureau provides data for small areas at their Lookup Website. Anyone with access to <http://venus.census.gov/cdrom/lookup> on the Internet can dial in and get information at the tract or block group level; they can even display the information on a map. HUD provides GIS tools to hundreds, maybe thousands of local communities, allowing community groups to display local Census information on maps. Are those activities "community GIS?" It seems that if "community GIS activity" is to mean anything, it must go beyond redistributing the work of these organizations.

We have defined "major community GIS activity" as one in which some organization collects data for small areas. Local, state or federal governments might first collect the data, or residents themselves might collect it. By "collect" we mean only acquire the use of, not necessarily generate primary data. However we will be excited to find organizations that do engage in primary data collection on their target localities.

Whose Analysis?

A major distinction is between organizations that take a "supply-side" approach (e.g., that post data on the Web but have little or no contact with data users) and organizations that are demand-driven (i.e., that provide data to individual clients in response to specific requests). The existence of supply-side organizations is too extensive to ignore, suggesting that "analysis" should be viewed as a continuum, with organizations that disseminate data with little analysis at one end, and organizations that perform custom queries for individual clients at the other. We are clearly more interested in organizations that engage clients.

Many have stated what they consider to be the ideal: neighborhood residents both collecting their own spatial data, and processing it themselves—using GIS software themselves. We have found a number of organizations that have as part of their mission the training of a cadre of citizens in how to use GIS. Thus the producers are also the consumers. However, this endeavor is challenging and the successes, as far as we can tell, have been few.

An additional dimension here is whether the organization has a single client or multiple clients. Clearly, a community-based organization (CBO) could provide GIS services to just itself, or it could provide services for free or a fee to others. And organizations without a direct involvement in community building or neighborhood development could provide GIS services to CBOs that do. We call such organizations "data intermediaries."

From Data to Information to Action

We see a continuum from data to action. Spatial data gets gathered and processed using a variety of analytical techniques. With the right mind-set and experience analysts can turn spatial data into spatial information that can be insightful for local communities. But lying even beyond insight is the notion that such analytical products as tables, graphs, charts and maps can be useful in a public policy context. It can be employed in an action agenda. We favor locating organizations that contribute to an action agenda as opposed to those which simply “shovel data out the door” or provide reports that describe situations that are not fertile ground for action by citizens at the local level. But this is a stringent criterion indeed. And thus we asked our survey respondents to reflect on their work and share examples with us of major successful and unsuccessful actions taken as a result of data and information generated by a community GIS. Our results thus far indicate that more action successes are borne out of the pairing of an action expert (e.g., a community organizer) with an educated GIS/policy analyst. Working collaboratively the right questions seemed to get framed and the appropriate GIS products produced.

The Size of the Operation and Budget

Our assumption is that not many people with GIS skills volunteer their time to work with grassroots groups. But we are prepared to believe otherwise. However, this brings in a definitional problem: if the definition of community GIS activity is too inclusive it is of little use, and the same is true if it is too exclusive. In one of our classes we had a student who used her newfound GIS skills to help her church select a new location. This work was unpaid, and might be the only time the church will make use of her skills. That may be an interesting example of the use of GIS by a community group, but it is so ephemeral that it would be hard to capture in a general survey. And it does not represent a major community GIS activity.

It is possible for a community organization to develop GIS capacity in-house. However, that is likely to be rare, for several reasons. Most community organizations have small staffs and small budgets, surviving from year to year on annual receipt of grants. Although the user friendliness of GIS systems--and the power of desktop GIS--is increasing, expertise in GIS work still requires a significant investment of time on the part of a user. Once the user has made that investment, they find themselves with a valuable skill for which organizations with bigger budgets are willing to bid. Also, even with desktop mapping programs, and free Census data in digital format, the cost of setting up a system is not inconsequential. The ability to make use of information is a skill in short supply as well. Many organizations would not need GIS work often enough to justify the investment in training a staff person to use it.

For these reasons, organizations that do have the resources and inclination to train or hire GIS users are likely to be valuable sources of expertise for community groups. These “data intermediaries” could allow community groups to focus on what questions to ask, rather than spending lots of time learning how to use the tool to answer a question.

Data intermediaries could fall into four general classifications: government agencies, university centers, quasi-autonomous non-governmental organizations, and non-profit organizations.

1. Government agencies: these could be federal, state or local government agencies. At the state and local level, these are most likely to be planning offices. They would typically have an in-house GIS capacity for their own work, and might provide information to community-based organizations on request. However, these offices are most likely to limit their community-oriented work to sharing

simple information or the results of their own projects ("throwing the data over the wall to whoever wants to use it"), not to undertake extensive work on behalf of a community organization.

2. Quasi-autonomous non-governmental organizations: planning commissions. These organizations are likely to be functionally similar to those in classification #1.

3. University research centers: these are most likely to be associated with political science, sociology, geography, urban planning, or public policy departments. Their focus is typically on the work of professors; the staff is likely to be students. Such centers are likely to have lots of turnover in the student staff, limiting the development of expertise in local community work. Moreover, the culture of higher education does not reward professors or students for community service; the rewards come from publishing research of interest to other university researchers, and increasingly from getting large grants for projects. More formal centers, such as research centers, may have a more professional-client orientation, but may also do work only on a fee basis, which may put their services out of reach of many small community organizations.

4. Nonprofit organizations: community-based organizations that have their own in-house GIS capacity. Larger, better-funded community organizations may develop their own GIS expertise, particularly if they choose a mission of providing such expertise to other community groups. These organizations are attractive to foundations, which increases the stability of their funding and hence staffing.

In addition to these four, a fifth type of organization has been discussed in the literature: community learning centers. These are described as locations where the public would be able to use computers with Internet access and, in this context, GIS software. However, there doesn't appear to be any expectation that these organizations would provide much specialized assistance to users. Rather, they appear to be largely passive in approach, providing a place where members of the public would be able to use computers and perhaps to get some limited training in computer programs, though probably not enough training to make use of GIS software.

The Survey Instrument

Appendix 2 contains a copy of the survey in its final version. It was slightly changed over time in response to some respondents' confusion over whether questions 2 and 4 (date of origin, and annual budget and staff size) referred to the PPGIS activity only or to the larger organization (if the organization had more than one function). Those two questions were rephrased to clarify that they referred only to the PPGIS activity.

The survey was conducted in three ways: by telephone, by e-mail, and by Web search. The e-mail survey consisted of three parts: an introductory section describing the origin and purpose of the survey; the survey questionnaire; and a sample response, based on our own organization (DAPA). We had written it out as a test of the questions, and included it as a guide to help others interpret the questions. The telephone survey used the survey questionnaire. The Web search collected information about organizations which had put sufficient data on the Internet to be able to answer our survey questionnaire; it was a way of collecting information in non-office hours and from organizations we were not able to contact.

We understood that the primary purpose of this survey was to create an inventory of public participation GIS efforts going on today. This inventory would presumably help researchers be able to understand the extent of the activity, and give them a universe of organizations to contact for further study. Since we were trying to compile an inventory, most of the questions were chosen to get basic information about the operation of these organizations: their structure, when they were founded, their funding sources and level of support, how many people work there, what data they collect, and what

services they offer. Will Craig suggested asking about major clients in order to better identify those organizations that do most of their work for grassroots organizations.

In the e-mail message, we included a request that respondents share any compelling stories about the use of their work by community groups. However, we got very few stories. We guess that people are more likely to tell stories in person than to write them down or think of them in the course of a telephone survey, perhaps because they seem vague, would take too long to write, and do not flow naturally in the slight pressure of a telephone interview.

The starting universe was two lists: the respondents to the Urban Institutes' first survey on Neighborhood Indicators projects, and a group of nine organizations identified by Will Craig and invited to a PPGIS meeting at the 1995 URISA conference (listed in the appendix of Sawicki and Craig [7]).

The Urban Institute's National Neighborhood Indicators Project (NNIP) list, contained in their first year report [8], consisted of a paragraph describing the response they had gotten to a survey of cities in the U.S., looking for organizations compiling neighborhood indicators. They surveyed many cities and got responses from 30. Many of those responses said that no organization in that community was doing anything like neighborhood indicators, or that an organization was thinking of doing something like that.

We began by e-mailing the survey to organizations for which we could find e-mail addresses, and followed up with a phone call if we did not get a reply. When we couldn't find an e-mail address for an organization, we telephoned it directly. In the e-mail message, and in each phone conversation, we asked each respondent if they knew of other PPGIS activities.

We also searched the Internet for references to the organizations mentioned in these two lists, primarily to find contact information about them, but also to see what other information we might collect about them. Finding references to these organizations on Web sites led us to other organizations also mentioned on those sites, which led us to still other organizations, which sometimes led us back to the original organizations. Given that our target was not sharply defined, searching the Web for information was like trying to drink from a firehose; we were overwhelmed with sites and organizations that might be relevant. Fortunately, the Web also gave us a means to contact them easily, and we e-mailed our survey to many new organizations. Sometimes we were able to collect almost all the information needed for the survey from an organization's Web site.

We also took several other tacks to expand our list of organizations. We e-mailed the survey to several mail lists that seemed pertinent. [9] We searched the literature on the topic, both on the Internet and in academic libraries. We also searched the Internet using such phrases as "public participation GIS," "neighborhood GIS," etc, using Alta Vista and HotBot. We attempted to follow up on all of these new leads.

In the e-mailed questionnaire, and in our telephone interviews, the last question was "what other organizations do you know of doing similar work?" We got very few responses to this question. Interestingly, sometimes organizations in the same city would not even mention each other. One explanation might be that the respondents' had a narrower idea of what our target organizations might be than we did. Another explanation might be that respondents might feel that to admit (to themselves, or to us) that there were other organizations in their community doing the same thing they were doing (providing neighborhood level data) would call into question the value of their own work. That would obviously be more true of an organization that was taking a supply-side approach--just putting information out--than of an organization that was acting as a consultant to neighborhood groups. In the end we were not sure whether the lack of cross-referencing was a result of not wanting to admit that their organization might be seen as redundantly doing the same thing as another organization in town, or a genuine lack of awareness of the existence of other organizations doing this kind of work.

Lessons Learned from the Survey

We learned two types of lessons: lessons about the process of surveying these groups, and lessons shared with us by the respondents about their work.

Lessons about the process

It cannot be said too often--make trial runs of a questionnaire. (We don't want to say that if you make something foolproof, they'll just make a better fool; rather, that we all see the world a little differently, and so you need to hear from many other people to tune your questions). We piloted our survey questions on our own organization. But not until we sent it to others did we see our failure to clearly indicate that our questions about dates and budget pertained only to the PPGIS activity, not to the entire organization (since in our organization, the PPGIS activity is all we do).

We got a very low response rate to our e-mail survey. We sent it to several maillists, and got two responses immediately, then only a handful more over the next month. The lesson seems to be that if people are going to respond to it, they will respond immediately.

Another lesson is that maillists are not always open to surveys. Some maillists are unmoderated, meaning that messages sent to the list are automatically posted to it. Other maillists are moderated, meaning a person reads each message sent to the list and decides whether to post it or not. The list administrator of one moderated list to which we sent our survey refused to post our survey. In response to a query as to whether the survey had been posted, she wrote that she routinely discards most posts that have to do with GIS, and feels that posting surveys to the list is of no benefit to the list members. The topic of that list is the provision of state and local information on-line. Her response was shocking, but also amusing. One of the ideas underlying the PPGIS initiative is the appeal of providing information to people and letting them determine if it is of interest to them, versus the old model of having someone else decide for them what information people should have.

We also e-mailed the questionnaire to specific organizations for whom we had an email address, to give them the opportunity to fill the form out at their own convenience. We got some responses from this, but ended up calling most of the organizations to push for a response. When we called, we asked to talk to someone then; if the person hesitated, we offered to email or fax the questionnaire to them. Some people asked for that, others talked to us right then.

Lessons learned about the organizations

As of November 1, 1998, we had 83 organizations in our database: 38 nonprofits, 20 affiliated with universities, 20 government offices, and 5 private companies sponsoring some PPGIS-related project. These came from 48 cities (Washington, D.C. led the list, followed by New York City and several other cities with multiple organizations) and one foreign country.

One lesson we learned was that there are a variety of PPGIS activities going on around the country, some throwing data over the wall to the public, some working with neighborhood groups to respond to their expressed needs, with a variety of databases, in a variety of sizes.

One of the most frequent comments we heard was that community organizations don't know how to make use of data. Another comment, which may simply be a different perspective on the first one, was that community groups don't attach much significance to the data that social scientists find interesting. Neighborhood groups tend to be uninterested in demographics, except when filling out a grant application. Several respondents noted that the most popular information for neighborhood groups was to be able to find out the owner of a building in their area (Kindleberger, Ryan).

Another respondent challenged one of the fundamental assumptions of PPGIS: the idea that information is power. Knowledge is power, no doubt, but knowledge of the demographics of a neighborhood is not necessarily very powerful knowledge. As planners have often had occasion to learn, the "facts" about a situation that are important to us do not necessarily influence the political decision-making process. To paraphrase a political scientist, facts count but resources decide [10], and the kinds of resources that make a difference in the local decision-making process are not directly supplied by PPGIS activities.

However, facts do count for something. The federal Home Mortgage Disclosure Act (HMDA) of 1975 required that lending institutions disclose the location of their loans, by Census tract. This information enabled neighborhood groups to demonstrate that banks were systematically not making loans in certain neighborhoods. This contributed to the passage of the Community Reinvestment Act (CRA) of 1977, which gave community groups some leverage with which to negotiate with banks for increased lending activity in their neighborhoods. Without the power of the CRA, the information provided by the HMDA would mean little, but with that information, the CRA was passed. The result has been more than \$60 billion in community reinvestment agreements. [11]

Another observation was about the activities of grassroots organizations themselves. One respondent claimed that most grassroots organizations spend 90 percent of their time seeking grants to keep themselves alive, leaving only 10 percent of their time to actually do anything to make a difference in the community. Rather than push them to use GIS to make marginally better use of that 10 percent, the respondent noted, helping them become more efficient at getting grants would free up much more time for them to focus on community work--at which point, they might be ready to make use of GIS.

This point is supported by the findings of a 1995 survey of neighborhood organizations in Ohio. The authors mailed surveys to 613 organizations; they received 183 responses. They attributed the low response rate to having included many very small organizations in the population surveyed. Even in the 183 respondents, approximately half of the organizations had annual budgets of \$100,000 or less, and about the same percentage had two or fewer staff members. In response to a question about the types of information most important to them, the two most important types of information were information about their service area and information about funding opportunities. [12]

No one in the survey mentioned any privacy issues about the information they were collecting and distributing, though this was mentioned by Charles Kindleberger in the 1998 URISA conference session on "Community Information Networks." This issue has several facets. Often the local-area information, especially administrative records, are confidential, though organizations can sometimes get access to records that have been edited (e.g., by deleting individual names) or sign confidentiality agreements limiting their distribution of the data. Still, Kindleberger's point was that people can object to having even public information about themselves being made easily available. In his example, it was property records that could be searched by name; the police in that community objected, because their names were in the database, and thus their addresses could be located by criminals who'd had encounters with them. The police had unlisted telephone numbers for the same reason. This same point has been raised recently (November 1998) about anti-abortion groups that put the names and addresses of doctors who perform abortions on the Internet. Similarly criminals convicted of child molestation while in prison collect information about families from newspaper articles (e.g., the names of parents and children, parents' occupations and schedules, etc.) and make it available over computer networks. After all, one of the points often made by information technology proponents is that just being able to collect widely available but scattered information in one place can greatly increase the uses that people can make of it.

There is also the issue of the impact on a neighborhood of providing information about it. Kretzmann and McKnight note that the kind of information social scientists collect and make use of is often information about social pathologies. [13] What is the impact on an inner-city minority neighborhood, for example, of putting data on the Web which makes it easier for anyone to see that the neighborhood

has high rates of poverty, teen mothers, welfare recipients, and criminal activity? Even if the same information is available about other neighborhoods in the community, will people bother to make comparisons (and find, for example, that some types of crime are more common in more "desirable" neighborhoods than in "underclass" ones)? Or will people just use the information to justify decisions to abandon these neighborhoods?

One of the most basic issues is whether to charge for services. There is a practical aspect; how will a data intermediary organization maintain itself if it doesn't charge for its services? On the other hand, how useful will it be to grassroots groups surviving on a shoestring if they can't afford to make use of its services? There is another aspect, rationing service: without any charge for its services, a group may be overwhelmed by requests, beyond its capacity to respond in a timely fashion. It then has to decide how to ration its services. If it charges something, even a nominal amount, the flow of requests is likely to be smaller. Our inventory did not address this issue directly, because our focus was on organizations that made no charge, or only a nominal charge, for their information--of which there proved to be many.

One issue rarely mentioned was whether there was a real value to grassroots groups internalizing GIS capacity, or whether it is a better use of their resources to focus on other things (such as learning to ask the right questions). The idea of "democratization of data" carries the implication that eventually grassroots organizations would have their own GIS capacity and do their own analysis. But short of the time when GIS systems become as simple to use as word processing software (if ever), becoming skilled at GIS takes time and effort, and in the end is a marketable skill. Larger, more established neighborhood groups, with stable funding and relatively large staff, may have the resources to internalize GIS capacity, but is it worth it? Our student author, quite taken with GIS upon his first exposure to it years ago, expressed an interest in majoring in GIS to an experienced planner. The planner offered the following advice: "you don't want to be the GIS expert, you want to be the person who poses the questions for the GIS expert to answer." The student decided that was good advice and we think it might apply equally well to neighborhood groups.

Conclusion

We set out to compile a comprehensive inventory of PPGIS providers. The first step in this process was to define what PPGIS providers were. We see them on a continuum, from those organizations that work closely with community groups to collect and produce local-area data and analysis, to those organizations that repackage local-area Census data and make it available to whomever wants it. We began by defining "local-area" as sub-city (neighborhood level). But we soon realized that this definition excluded much of the work of community environmental groups, so we tried to include them by defining "local-area" as areas other than standard political areas, e.g., other than states, counties, and cities—whether smaller than these, or cutting across them.

Our inventory reflects that definition, though we included everyone who responded, some of whom do not seem to us to be PPGIS organizations, but identified themselves that way. We do not claim that our inventory is comprehensive; it includes organizations that do not quite meet our criteria, and certainly omits some that do. And given the progress of desktop GIS technology, more organizations may be getting into PPGIS work every month. But we feel that this list will provide a good starting point for further research into the breadth and depth of PPGIS activity today. We hope to pursue these providers, learning more about their operations. With additional support we may also evaluate the effectiveness of their operations by surveying their clients.

Notes

- [1] Available at <http://bbq.ncgia.ucsb.edu:80/varenius/jec.html>; accessed June 16, 1998.)
- [2] (Announcement: The Varenius Project and New Arrangements at NCGIA, March 12, 1997, available at <http://bbq.ncgia.ucsb.edu:80/varenius/announcements.html>, accessed June 16, 1998).
- [3] (December 1997 Annual Report on Project Varenius, accessed June 16, 1998 as http://bbq.ncgia.ucsb.edu:80/varenius/annual/info_soc.html).
- [4] The workshop page is available at <http://ncgia.spatial.maine.edu/ppgis/ppgishom.htm>; and the report on the workshop available at <http://www.geo.wvu.edu/i19/report/public.html>).
- [5] (Varenius Research Initiatives are available (accessed June 16, 1998) at <http://bbq.ncgia.ucsb.edu:80/varenius/initiatives/ncgia.html>).
- [6] We should acknowledge especially, a detailed e-mail sent to the PPGIS list by Renee Sieber on 7/8/98, and several e-mails from Paul Schroeder suggesting organizations to survey.
- [7] "The Democratization of Data: Bridging the Gap for Community Groups," David Sawicki and Will Craig. *Journal of the American Planning Association*, Volume 62, Number 4, Autumn 1996.
- [8] The Urban Institute. *Democratizing Information: First Year Report of the National Neighborhood Indicators Project*, March 1996, pp. 118-136.
- [9] PPGIS-Scope; Pn-net, the Planner's Network, with 254 subscribers as of September 1998; GOVPUB, "an open discussion forum for state and local providers of public information and others who care about getting local and state government information to the people in digital formats";
- [10] "Votes count but resources decide." Stein Rokkan, quoted in *Regime Politics: Governing Atlanta 1946-1988*, Clarence Stone, Lawrence: University Press of Kansas, 1989, p. 239.
- [11] Gale Cincotta, "From Redlining to Reinvestment--The Need for Eternal Vigilance," Keynote speech at 4th International Conference on Financial Services: "European Monetary Union and the Regional Responsibility of Financial Institutions Toward the Customer," Strasbourg, France (European Parliament), September 27, 1996. Available at http://www.iff-hamburg.de/Strasbourg_virtuell/Reden/cincotta.htm. Accessed 9.17.98.
- [12] Stoecker, Randy. *Putting Neighborhoods On-Line; Putting Academics in Touch: The Urban University and Neighborhood Network*. Accessed 9/17/98. No date. <http://131.183.70.50/docs/UUNN/CDSPPR.htm>.
- [13] Kretzmann, John, and John McKnight. *Building Communities from the Inside Out*. September 1996: ACTA Publications. Their response is that rather than beginning with a focus on the problems in a community, people should begin with a focus on the assets that community has that could be mobilized to deal with their problems.

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APPENDIX 1 PPGIS SUPPLIERS CONTACTED

(In separate file - sawicki_table.pdf)

APPENDIX 2

THE SURVEY INSTRUMENT

Please excuse cross-postings. Please forward to anyone you know who would be interested in this topic. The "Public Participation GIS" effort of the National Center for Geographic Information and Analysis (NCGIA) requests your assistance in identifying significant information technology projects providing community information to community groups around the world. For more information about this project, see <http://www.ncgia.ucsb.edu/varenius/ppgis/>. Your response to this request can be either a full reply to the questionnaire below or a brief note or call to us, which we can follow up with you in more detail.

There are other surveys looking at the use of information technology by nonprofit organizations. This survey is broader than just nonprofit organizations, and narrower than the entire range of information technology. Our goal is to assemble an inventory of organizations that contribute to public participation in community decision-making by providing local-area data to community groups.

We are looking for organizations that:

- (a) collect demographic, administrative, environmental or other local-area databases,
- (b) do something to the data to make it more useful locally (e.g., address matching of individual records; creating customized tables), and
- (c) provide this information to local nonprofit community-based groups at low or no cost. This can include local non-profit community groups that are collecting and processing data in-house, or data "intermediaries" that process and analyze data for others ("data intermediaries" might be government offices, nonprofit groups, university-based centers, or ???).

A major distinction is between organizations that take a "supply-side" approach (e.g., that post data on the Web but have little or no contact with data users) and organizations that are demand-driven (i.e., that provide data to individual clients in response to specific requests). We are interested in knowing about both, but our priority is finding the latter.

Outcome: the results of this survey will form an inventory for the Public Participation GIS (PPGIS) interest group in NCGIA. The results will also be reported at the PPGIS conference in October of this year (see <http://www.ncgia.ucsb.edu/varenius/ppgis/call.html>). Participants in the survey will receive an electronic copy of the results as soon as the inventory is compiled. After the conference the results will be posted on the Web, with a link at <http://www.ncgia.ucsb.edu/varenius/ppgis/>.

If you are involved in such a project, we would appreciate very much your taking the time to fill out the questionnaire (contact information and 9 questions) and reply via e-mail to any or all of the questions. If you know of such a project, please let us know; please provide as much information as you can (but telephone and/or e-mail at a minimum) in your reply in order that we may contact them directly. Please take a few moments now to send a quick response. To be included you must reply by September 9, 1998. But we'd appreciate a quick response.

A detailed example of how one organization answered the questions is given at the end of the questionnaire. The organization you represent or have in mind may or may not have projects this large or structured; any information will be welcome.

If you wish to send written materials describing your work, especially with compelling stories of how the data was used by a community group, please address it to: Randy Peterman, Department of City Planning, College of Architecture, Georgia Institute of Technology, Atlanta GA 30332-0155.

If you have questions or information, please contact Randy Peterman:
E-mail: dpeterman@gatech.campus.mci.net
Phone: 404-881-3474
Fax: 404-894-6489

Thank you for your participation!

***** reply via e-mail to: dpeterman@gatech.campus.mci.net*****

***** Beginning of questionnaire *****

Name of Organization:
Contact Person Name:
Contact Person Title:
E-mail Address:
Telephone Number:
Web Page URL:
Fax Number:
Mailing Address:
City/State:
Country:

Questions:

1. What is the administrative structure of this organization (e.g., connected to a college or university, part of a municipal government agency, free-standing NGO, etc.)?
2. When was the organization established?
3. What is the financial base of this organization (e.g., supported by annual grants, line-item in government budget, fees charged, etc.)?
4. What is the annual budget, and number of staff (please indicate full-time and part-time staff)?
5. What types of data do you collect (e.g., Census, local administrative data, environmental, transportation, etc.)? What are your major databases?
6. Does the organization provide services to non-profit community groups? What charges, if any, are made for these services? Or does the organization provide data or information but no direct services?
7. Who are your major clients?
8. What have been some of your major projects? Notable successes or notable failures? Explain.
9. Other comments:

***** End of questionnaire *****

Example of answers to questions:

1. The Data and Policy Analysis Office (DAPA) is part of The Atlanta Project (TAP) (host). TAP is a non-profit organization focusing on community development in the Atlanta area; it is part of the Carter Presidential Center. DAPA is a group of Georgia Tech city planning students working for The Atlanta Project under GT Prof. David Sawicki's direction.
2. DAPA was started in 1992.
3. DAPA has a contract with TAP, renewed annually. Base funding comes from TAP; additional funding comes from external contracts with local groups, governmental agencies, and foundations.
4. Total annual budget (1997-1998) is \$300,000. 1 full-time employee, 4 part-time employees (base staff); additional part-time employees hired as needed for contracts (currently 2). All are GA Tech students.
5. Census data, birth and death records, ES202 records, welfare records, crime records, education records, land parcel records. DAPA attempts to acquire other data as requests by its clients dictate.
6. Provides data on request to individuals and community groups within The Atlanta Project service area (central and south metro Atlanta). Address-matches data to enable custom queries. Also does in-house analyses for specific projects. Responds to small-medium scale requests from community groups or individuals within The Atlanta Project area for free; large-scale requests are undertaken on a fee basis.
7. By number of requests, major clients are TAP (in-house) and local individuals and grassroots community groups (users are often seeking information for writing grants or making plans). By amount of work involved, major current clients are TAP and its neighborhood groups; Atlanta Public Schools; Georgia Policy Council for Children and Families; HUD; Atlanta Police Department; Habitat for Humanity; United Way.
8. Georgia "Kids Count" database on WWW (<http://www.pccf.state.ga.us/results.>); Neighborhood Housing Code Enforcement and Tax Delinquency study; Atlanta Public School Consolidation study; Generating After-School Programs in Atlanta Middle Schools; Providing Health Clinics in Atlanta Elementary Schools; Helping Welfare Recipients Find Transportation to Entry-level Jobs
9. Part of DAPA's mission is making data available to the public, especially in resource-poor neighborhoods. However we have done little to enable community groups to work hands-on with the data itself (e.g., training community people to use GIS). Most of our work is done in response to requests. We work with clients to help them define their data needs, but we don't approach organizations and suggest things for them to do. We are a data intermediary, and regard initiating community projects as someone else's job. We have a variety of local-area databases, and can provide relatively sophisticated spatial analysis quickly; therefore, we are often approached by local government agencies.