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Memphis Maps

The Memphis Maps program trains local students in Geographic Information Systems technology, and also provides the community with valuable community demographic and assessment information. The collaboration is symbiotic in that through a program of information, training, education, and collaborative use of resources, beneficial and sustainable interdependencies have been developed for both the neighborhood and the university. This article describes the program and identifies factors that contributed to its effectiveness as a neighborhood/university collaborative.

Global, national, and regional economic, political, and social restructuring has raised questions about the roles of neighborhood-based organizations and higher education institutions in community building in urban settings. Questions about neighborhood-based efforts concern the capacity for actions at the local level to significantly affect community building. Questions about universities are concerned with identifying appropriate activities and modes of interaction with neighborhood organizations. Evidence of increased attention to these questions is reflected in the creation of new journals such as *Metropolitan Universities*. Further evidence appears in the creation of national initiatives such as the U.S. Department of Housing and Urban Development's Community Outreach Center Program.

Initial analysis of these efforts has already begun to yield some answers. A key point is the need for locally based interventions to be both comprehensive and long-term in order to be effective. Comprehensive interventions commonly require resources beyond the capacity of any one institution, and thus require collaboration, which enhances many community-building efforts by neighborhoods and universities. Long-term means that the collaboration needs to be sustainable, which requires the consideration of questions about the capacity for neighborhood-based efforts and appropriate roles of universities. This article identifies factors that contribute to the sustainability of effective and appropriate neighborhood/university collaboratives through a case study of a neighborhood mapping program in Memphis, Tennessee.

Memphis Maps

The Memphis Maps collaboration began as a demonstration program in Memphis, Tennessee, during the summer of 1996. Eight high school students were trained to conduct community surveys and use Geographic Information Systems (GIS) technology in mapping their inner city neighborhood. The training enhanced technical skills for the students and neighborhood, increased the students' awareness of their neighborhood, and produced important information for the neighborhood's community organization, the Orange Mound Collaborative (OMC). Technical and financial support came from The University of Memphis, Memphis City Schools, the City of Memphis Division of Housing and Community Development, the Orange Mound Collaborative, Shelby County Community Services Agency, Community Foundation of Greater Memphis, and NationsBank.

The program was continued and expanded in 1997, when twenty-four persons from three Memphis neighborhoods—including students from five high schools, three teachers from three high schools, and a community representative from each neighborhood—received training. Organizations joining the collaborative included the Douglass/Bungalow/Crump Neighborhood Association, the New Chicago Community Development Corporation, the South Memphis Neighborhood, and LeMoyne Owen College. An additional result was the creation of a minority-owned business by neighborhood residents to continue the program.

An early indicator of the program's success came from the use of the information in the maps and surveys by neighborhood residents. Other indicators included improvement in the technical skills of students, teachers, and neighborhood residents as measured by program evaluations; curriculum changes in the schools and at the university; use of the program information in community building; and changes in the content of university research. Another and important indicator of sustainability appeared in the partners' desire to continue and expand the program.

Processes of Building Collaboration

Memphis Maps began with efforts by the OMC to treat neighborhood needs, and the involvement of a University of Memphis faculty member in community building. The Collaborative, comprised of stakeholders in the neighborhood, sought to encourage the neighborhood's physical and economic development, improve safety, and improve residents' technical skills and educational opportunities. The University of Memphis and local private and public agencies in Memphis were seeking to improve community-based data systems. The capacity to train people to use GIS technology and baseline databases was available at The University of Memphis.

A faculty member at the university had been working with the Collaborative through a Community Outreach Partnership (Memphis COPC) grant from the U.S. Department of Housing and Urban Development. Hearing of the neighborhood's desire for improved maps, he presented evidence of the potential for GIS to the Collaborative, which then took steps to develop a GIS data base. OMC members

arranged a series of meetings with the principal at Melrose High School, recruited the Shelby County Community Services Agency to become involved in the effort, and sought technical and leadership support from the Memphis COPC. Resident participation was critical in choosing and initiating an effort to develop a neighborhood-based spatial information system and ensuring that a variety of interests were represented in the project.

In collaboration with Orange Mound community groups, Memphis COPC staff recruited a teacher with GIS experience from Melrose High School and brokered the expertise of members of the Herff School of Engineering with GIS technology and databases at the university. With Memphis COPC assistance, the teacher further developed his GIS skills, recruited two additional high school teachers and a group of high school students for training, and began a survey of neighborhood assets and liabilities from the neighborhood students' perspective. Together the Memphis COPC and the other collaborating groups negotiated support from the Community Foundation of Greater Memphis, the City of Memphis Division of Housing and Community Development, Memphis City Schools, and the Shelby County Community Services Agency for a pilot GIS summer training program for the high school students called, "Memphis Maps." NationsBank provided savings bonds and other incentives for student participants.

Student participants in a six-week summer GIS program received education and training in GIS theory and application, along with the collection of neighborhood geographical data and photographs of neighborhood assets, GIS database construction, and data entry and management techniques. At each step in collecting data the students participated in group discussions and shared their observations, impressions, and perspectives of the community in oral and written form. which encouraged group learning, and fostered improved communication and social skills as well. Additionally, the students took field trips to local businesses and agencies using GIS, where they observed and "shadowed" GIS specialists at work for a day.

Computer laboratory exercises were conducted at The University of Memphis in collaboration with Groundwater Institute of the Herff College of Engineering. Using the neighborhood data amassed and stored in the GIS database, the students explored causal relationships between different geographical entities in the community, produced maps, charts, and statistics, and applied their reasoning skills to real-life problems, reinforcing the real-world applications of the GIS technology. Using data gathered from fieldwork exercises, students gained a practical understanding of data entry and output and its analysis and use.

Program Outcomes

The students learned about the civic and cultural heritage of the neighborhood through discussions, field trips, and map production. They also visited historical sites and gained insight on the historical development and the heritage of the Orange Mound community, and the accumulated historical data were subsequently incorporated into the overall academic curriculum of neighborhood schools.

The students also produced portfolios summarizing their progress through the summer program. Included in each portfolio was a Student Profile Form containing information about the student's educational background, such as the last grade completed, grade point average, and prior computer training, as well as employment history and references, an interest inventory, and a release of information form. Also included was an employment contract, under which each student was paid for participating in the program through the Private Industry Council (PIC). The students were designated GIS Apprentices, and each signed a contract outlining the job description and duties. Evidence of the students' mastery of the material was captured in tests and quizzes covering GIS concepts, ArcView software, housing code and zoning information, and community history, which became part of each individual's portfolio.

The maps produced for neighborhood planning during the final two weeks of the program were a major part of the student portfolios and used both existing documentation reflecting the students' perspectives on assets in their neighborhood. Each student created eight to ten thematic maps highlighting various aspects of the Orange Mound community that depicted landmarks and facilities, restaurants, zoning, services, retail businesses, youth facilities, schools, recreation facilities, and industries. The final document in the students' portfolio was a Certificate of Participation that was presented to each student during the awards ceremony on the final program day.

Following the Memphis Maps program, an event in October 1996 at Melrose High School celebrated the program's success and presented it to community leaders, education administration, and city and county governments and agencies, as well as the media. At that time a permanent GIS workstation was unveiled at Melrose High School. The program received coverage on two television news programs, in the *Memphis Commercial Appeal*, the city's daily newspaper, in the Memphis City School System newsletter, *Pathways*, and in The University of Memphis newsletter, *Update*. The presentation consisted of panels displaying pictures of the participants and narratives, a Memphis Maps PowerPoint presentation, and a satirical dramatization performed by the students illustrating the usefulness and impact of GIS technology in neighborhood schools and communities.

The program supervisor took the lead in developing the curriculum and integrating it into the Memphis City Schools curriculum. In addition, a number of educators and at least one GIS software company (ESRI, Inc., of Redlands, California) outlined strategies for the teaching of GIS technology for the K-12 levels. On the basis of these resources, an appropriate curriculum to meet the needs of the youth is being developed: a group of teachers from Hanley Elementary School and Dunbar Elementary School in the Orange Mound neighborhood are working to define a neighborhood-based curriculum that uses the Orange Mound maps.

Members of the faculty at The University of Memphis and LeMoyne-Owen College were simultaneously trained in GIS during the pilot program and incorporated it and the use of spatial data into their graduate and undergraduate courses. In addition, the program resulted in the creation of a new course in community building to be team-taught by the codirectors of the Memphis COPC. This new course is

interdisciplinary and incorporates the lessons learned about processes of community building through this program.

The success of the first summer's GIS training program for high school students called for its continuation during the summer of 1997 in the Orange Mound neighborhood and its expansion into the two other Memphis Enterprise Community areas, the North Memphis and South Memphis neighborhoods. Eighteen students from neighborhood high schools across the enterprise communities were trained to produce maps using GIS software, and one teacher from each of the high schools and one community project coordinator from each community was also recruited and trained in the use of the software.

The students produced maps specific to their neighborhoods, showing the locations of neighborhood churches, businesses, and other institutions, zoning areas, and demographic analysis based on census data, similar to the maps produced the first summer. In addition, the students mapped the locations of vacant and abandoned houses, the location of problem areas based on resident complaints, the quality of housing stock, the location of environmental and safety code violations, historic buildings, and other data mandated by each neighborhood.

New Partnerships

New relationships were established through the Memphis Maps program. The second summer program benefited from the involvement of the Orange Mound Collaborative, which provided $20,000 for its continuation in their neighborhood. In addition, the City of Memphis Division of Housing and Community Development increased its involvement by supporting the program's expansion into the North Memphis and the South Memphis enterprise communities with a $70,000 grant. The 1997 Memphis Maps program expanded residential ownership by involving the Orange Mound Leadership Council in data collection on housing codes and violations. The council also provided mentoring for the students in future summer GIS mapping programs.

A major goal of the COPC now is to establish GIS permanent workstations in the Memphis City Schools' Family Resource Centers in each of the city's enterprise communities. Neighborhood stakeholders can access data at these workstations and transfer information onto maps, using available data as well as adding information that they themselves gather. New computer centers are being established in each of the Family Resource Centers through a partnership among the United Way of the Mid-South, the Memphis Educational Computer Connectivity Alliance (MECCA), and the City's Division of Housing and Community Development. These centers each will have ten state-of-the-art computers and software and will be available to community residents. Locating the GIS workstations in these centers and providing training at these locations is consistent with the university's and the city's goal of providing technology access to low-income residents in the Memphis enterprise communities. Another new partner in the GIS effort is the Shelby County/

Memphis Public Library. The library sees potential for the technology and has expressed interest in community-based data collection in the Orange Mound neighborhood.

The two summer GIS programs served as a business incubator for the project supervisor, who has started a minority company to provide the management of future summer efforts. In the future, his company will be contracted by the city to direct the program. The Memphis COPC and The University of Memphis will offer support in data acquisition and preparation and will maintain a countywide GIS database to be shared with the university, government, and grassroots communities.

Sustaining Neighborhood/University Collaboratives

A beginning point for identifying factors contributing to the sustainability of neighborhood/university collaboratives may be found in early work by Laumann, et al. (1978). Drawing on exchange theory, the authors examined the formation of interorganizational networks, and identified three conditions contributing to the formation of effective collaboratives: self-interest, participation based on the promise of future events, and the threat of negative sanctions. Presumably one or more of these conditions may be sufficient to bring about the creation of a collaborative.

The question for neighborhood-based and university collaboratives, though, goes beyond what leads to their formation. Effective community building efforts require sustainability. Self-interest or the promise of future events may be sufficient to bring about the formation of a collaborative, but do not guarantee that the collaborative will continue. An additional factor leading to continuation may be found in the variability that can exist in the self-interest that brings a collaborative together. Collaboratives can be seen as sets of interdependencies. As groups join a collaborative in self-interest, for example, they become dependent on other members of the group to satisfy that self-interest. The level of self-interest and resulting dependency for any member of a collaborative, however, may vary. For some groups, participation in the collaborative may be important in serving fundamental needs; for others, needs served by the collaborative may be less important.

The more a collaborative serves a group's need or self-interest, the greater that group's potential dependence on the collaborative. Collaborative members with greater levels of satisfied need are more interdependent. Sustainability of a collaborative is increased by identifying and building on areas of greatest potential interdependency. The search for sustainability of neighborhood/university collaboratives, therefore, is a search to identify potential areas of higher interdependency. Analysis of the Memphis Maps program points to three areas: information, training/education, and resources.

Neighborhood-Based and University Information Interdependencies

Information refers to knowledge and understanding. Information relative to community building includes quantitative and qualitative databases and reflection, analysis, and understanding. Several factors may affect the level of information interdependencies for neighborhoods and universities.

In the case of neighborhoods, one factor is that of resident access to relevant information. Medoff and Sklar's (1994) documentation of the Dudley Street Initiative in Boston illustrates how appropriate information in the hands of residents can enhance their power and success in shaping their community. Since the type of information that is available is important, the second factor is how it is obtained. Kretzmann and McKnight (1993) have shown that when residents are involved in the development of information—through defining community assets, analysis of conditions and opportunities, and selection of strategies and programs—they take on "ownership" in the community building effort. That ownership results in greater commitment. Where access to information that residents have been involved in producing can potentially increase resident power and commitment, neighborhood-based community building efforts will have a greater interest in collaborating with sources that can help to produce that information.

The Orange Mound Collaborative recognized the need for improved neighborhood information and mapping. OMC was also prepared to commit neighborhood resources and residents to efforts to obtain that information; however, it lacked the computer hardware, software, and technical capacity to collect, organize and analyze spatially-based information. Those resources were at the university.

The university, on the other hand, had core self-interests related to GIS and community building. A central part of the mission of all universities is the creation of knowledge and understanding, and dissemination of that knowledge and understanding furthers the mission. There is also a growing awareness that to accomplish those tasks requires the ongoing engagement of faculty members and students in learning (Boyer, 1990; Lynton and Elman, 1987).

Each of these points addresses the self-interest or need for the university to be involved in a GIS community-building effort. University involvement is appropriate when its actions involve the development of knowledge and understanding of community building. It is also appropriate when it involves dissemination of knowledge and understanding *for* and *about* community building. For and about includes knowledge about both the outcomes and processes of community building. And, knowledge and understanding of community building and dissemination of that information can best come about through faculty and student engagement with communities.

That level of self-interest is increased by the form through which universities become involved in community building. Participation as a partner in a collaborative with neighborhood-based efforts increases the capacity of universities to obtain information and understanding and therefore meet their core missions. Higher education institutions routinely have access to institutionally generated databases such as census or municipal data. What they are commonly missing is resident-generated information. Participation as partners with residents in generating information can provide both new information and new perspectives on community conditions and processes. It also provides access to new information on the processes and consequences of efforts at community building. Higher education institutions gain expanded opportunities for the dissemination of knowledge and information.

The University of Memphis is located about three miles from the area represented by the Orange Mound Collaborative. At the time the Orange Mound Collaborative was seeking improved neighborhood-based information, academic units within the College of Arts and Sciences and the Herff College of Engineering at The University of Memphis had already begun to develop extensive hardware, software, and technical capacity to support GIS. Those units had access to standard spatial data produced by public and private agencies, such as census, assessors', and public health data. However, much of that data could not be disaggregated down to the level of the neighborhood, was of questionable accuracy at the neighborhood level, or did not include information needed for effective community analysis and building. As a result, the university was limited in its capacity to address the information needs of neighborhoods. And university-based faculty and students were not able to fully address spatially-related questions in their research or instruction.

Participation in the Memphis Maps project gave the university access to the community to meet its information needs. Maps that were produced added to the university's community database. The opportunity to give training and education to neighborhood residents and university faculty and students enhanced its ability to meet its role in dissemination of knowledge and understanding. The information generated and insights gained by faculty and student involvement with the neighborhood led to new questions being addressed in university research.

Capacity Building

To date, use of GIS technology has been limited mainly to government and business technology experts (ARC News, 1996). Existing educational curricula are largely focused on transferring GIS capacity to this technically oriented population. The self-interest of the Orange Mound neighborhood was not only to have the information generated by GIS, but also to have greater capacity to operate and manipulate the technology. The self-interest of the university was to see if it could transfer the GIS technology to a nontraditional population as a means of community building. The interdependency of university and neighborhood-based organizations, therefore, was based on the promise of increasing capacity of participating residents, students, and faculty to use GIS technology.

This interdependency was achieved through numerous discussions between the neighborhood residents and COPC staff that resulted in a series of interrelated steps. One step was a decision to involve the neighborhood high school through three of its teachers in the development and implementation process. The next step was the creation of a plan to recruit students from the neighborhood high school to participate in the summer pilot program. Subsequently the residents, high school teachers, and the COPC team were jointly involved in the development of a curriculum that would insure academic integrity and bring the students to a better understanding of their neighborhood. Finally the summer training program resulted in a series of products and presentations that could be linked to the discussion of present community action in their neighborhood as well as the promise of future improvement.

Resources

The third interrelated component of neighborhood and university interdependency in the Memphis Maps (GIS Program) was the promise of resources to support the effort. Collaboration between the community-based groups in Orange Mound and the COPC team led to the generation of a list of organizations and agencies that could become partners in the program. Each agency identified had a history of involvement in neighborhood development and a language that encouraged collaborative efforts. No organization alone had sufficient resources to carry out the program. The approach by the community-based groups and the university in collaboration led the other organizations to come together to provide the necessary resources. In effect, all five agencies that were approached for a specific purpose related to the Memphis Maps Program agreed to funding. The success of the program for the first year then led to promise of continued funding of the partners for the second year.

Insights Gained toward Developing Sustainable Neighborhood/University Collaboratives

In summary, the success of the Memphis Maps Program illustrates that the mutual interdependencies of neighborhood groups and the university can yield a sustainable program. The promise of information, capacity building, and resources based upon an agreed need (maps) produced a mutually beneficial situation that is sustainable. In turn, the sustained relationship led to changes in both the neighborhood and the university.

Participation by neighborhood residents led to new forms of information, new perceptions by residents about their communities, and increased resident participation and resulting community capacity. Participation by faculty and students at the institutions of higher education as partners with the communities had several consequences. New databases created by dissemination of GIS technology to the communities became an incentive for faculty to develop their skills and those of their students to use the new databases. Interaction between the new databases and new skills among members of the faculty and students led to the integration of GIS technology for community building analysis into the curriculum. That integration is leading to an increase in the use of the technology in research generally and in research focusing on community building.

Another result of the project has been the development of sets of interdisciplinary networks inside and outside the higher education institutions to provide that capability. Finally, the higher education institutions' participation as partners in the Memphis Maps project has led to the development of deeper, richer partnerships between the institutions and neighborhoods and agencies in Memphis. As an example, the databases and trust created through the Memphis Maps project have led the higher education institutions to join with city and community development corporations in a citywide major initiative to increase the stock of affordable housing.

In conclusion, the Memphis Maps project has demonstrated a means for higher education institutions to engage in sustainable community-building efforts in ways appropriate to their roles while serving the self-defined interests of neighborhoods and communities. The project also demonstrates how that engagement is leading to broader partnerships and the institutionalization of university-community relationships. It should be added, however, that the tasks required to accomplish those partnerships and relationships—the negotiating, clarification of roles among partners, refining trusting relationships, and supervision of collaboratives—is very time-intensive. And, it requires very special skills. Thus sustaining and realizing the potential of these relationships will require restructuring the roles, rewards, and allocation of resources within higher education institutions and community agencies to support those tasks.

Suggested Readings

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