When GIS was Rejected:
Implications for collaborative planning and public participation GIS (PPGIS)

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WHEN GIS WAS REJECTED: IMPLICATIONS FOR COLLABORATIVE PLANNING AND PUBLIC PARTICIPATION GIS (PPGIS)

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ABSTRACT

In November of 2001, community residents in the city of Eugene, Oregon stated that there is an “excessive concentration” of social services in two of its neighborhoods. In response, the City Council suggested that mapping and analyzing the spatial distribution of social services would be an important component to understand and address this matter. A Task Force comprised of neighborhood representatives, social service representatives, and two neutral participants was developed to explore this issue in a collaborative method. Mapping services were offered to the task force, but was rejected by the group because members thought that mapping the locations of social service and neighborhoods would not accurately capture the issue, would be too complex, too subjective, and a waste of time. This paper explores the decision of the group to reject the use of GIS, the general failure of the Task Force, and suggests broader implications related to the use of GIS in collaborative and public participation planning endeavors.

INTRODUCTION

Many people are generally sympathetic towards the policy of treating mental health patients in community settings rather than mental health institutions. Similarly, people are often supportive of social service agencies that seek to help the poor and the homeless. However, this sympathy often turns to opposition when the location of a mental health care facility, halfway house, or homeless shelter is proposed within a community members’ own neighborhood. In November of 2001, community residents in the city of Eugene, Oregon stated that there was an “excessive concentration” of social services in the Whiteaker and Westside/Jefferson neighborhoods (Dietz 2001). In response, the City Council directed the City Manager to: *“Develop and initiate a public process to involve neighborhood groups, residents and providers in analyzing social service siting, impacts, and needs and return to the city council with options and recommendations.”* The Council went on to suggest that mapping and analyzing the spatial distribution of social services would be an important component of this endeavor.

While one might think that mapping the geographic locations of social services and calculating social service densities for certain neighborhoods would be a somewhat straightforward task, the opposite in this case was true. Rather than taking advantage of spatial technology, the Task Force that was created to address the issue of social service concentration specifically rejected the use of GIS in carrying out its tasks and addressing the original concerns of certain neighborhoods. After some preliminary maps were distributed in the first meeting, the group abandoned the use of GIS feeling that the maps would inaccurately capture the issue. Members thought that mapping the locations of social services and neighborhoods would be too complex, too subjective, and a waste of time. Some of the Task Force members felt that it would be unproductive to get "bogged down" in the details of a GIS analysis and felt that they had enough of an intuitive understanding of the issue that mapping would serve no tangible purpose.

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In the end, however, the members of the Task Force never agreed on a common problem and as a result, ended in a somewhat bitter, antagonistic state. This paper explores the decision of the group to reject the use of GIS and its implications for the general failure of the Task Force. Using this case study, broader ideas are extrapolated to important, but perhaps less tangible goals of Public Participation and Geographic Information Systems (PPGIS), such as its capacity to define an issue, to create common understanding, to bridge constituencies, and to provide focus for a public participation process. Thus, rather than representing a statistically significant study on collaborative planning, this case illustrates how the tool of GIS can aid in the collaborative decision-making environment.

BACKGROUND

The issue of siting neighborhood-based social services is linked to the process of "deinstitutionalization". During the 1950s and 1960s, mentally ill or disabled, physically handicapped, and other dependent groups were increasingly being moved from asylums and prisons to community based settings. This movement became known as deinstitutionalization and was believed to be a more humane approach to providing services. It offered clients the opportunity to reintegrate into society and become "normalized". However, deinstitutionalization often resulted in neighborhood homeowner opposition to proposed facilities. This attitude has been referred to as the NIMBY syndrome (not-in-my-backyard). The reasons for community opposition include such fears as a decline in property values, increased traffic and parking problems, decline in neighborhood quality or character, and safety concerns (Dear and Wolch 1987; Dear and Taylor 1982; Takahashi 1997). The processes of suburbanization, exclusive zoning laws, economic factors, availability of transportation and affordable housing, and other concerns have tended to lead to a clustering of community care facilities in areas around the inner city. Residents in many of these areas began to argue that concentrating social services in or near their neighborhoods was unfair and these services should be more equitably dispersed (Dear and Wolch 1987).

Siting human services and group homes presents a unique set of challenges compared to other types of facilities that are often considered Locally Unwanted Land Uses (LULUs). The issue of whether it is better to concentrate or evenly disperse social services throughout local communities is very complicated. Dear and Wolch (1987) state that the process of deinstitutionalization or shifting human services from large facilities to small community-based facilities places a heavy burden on under-funded local communities, especially in areas where these services are concentrated. However, the impacts or spatial externalities of siting social services are difficult to measure. In fact, numerous studies have been unable to establish a clear link between siting human services and group homes and local impacts on crime, traffic, or property values (Colwell Dehring & Lash 2000; Farber 1986; Dear 1977).

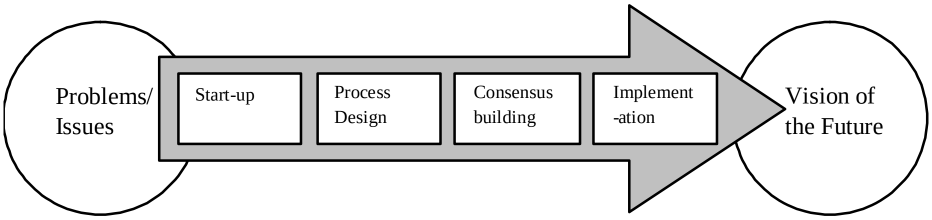
The pro-dispersal position might argue that the clustering of social services into inner city ghettos runs counter to the goal of re-integrating service dependent populations into society. In addition, concentrating facilities into low-income areas with high crime rates can negatively affect public attitudes towards social service users. The pro-concentration position might counter that the clustering of social services can enhance social capital among service users and providers and can improve access by creating a network of facilities that are linked to transportation systems. Dear & Wolch (1987) express concern that community opposition combined with gentrification, urban renewal policies, and a lack of federal funding are dismantling many inner city social service ghettos, which is having the effect of displacing and subsequently reducing needed services in local communities and increasing homelessness.

Collaborative planning presents one increasingly common planning approach to addressing divisive issues such as these. Some planning theorists have suggested that given the complexity and pluralism of our society, expert-driven planning methods are not an appropriate or effective method of decision-making and argue that communicative/interactive processes are part of a new paradigm of planning practice (Innes 1995, Healey 1997, Forester 1989). The collaborative/consensus-based model attempts to integrate competing interests through an informal problem solving process in which all stakeholders learn about each other's concerns and develop strategies to maximize mutual gains (Susskind et al. 2000). Planning theorists have applied the collaboration model to planning practice and planning practitioners have increasingly incorporated facilitated group process techniques into local public participation efforts.

There are several types of collaborative processes and numerous heuristic models designed to analyze and better understand them (Susskind and Cruikshank 1987; Gray 1989; Julian 1995; Selin and Chavez 1995). The major elements of these models are often summarized into three broad phases; the *problem-setting phase*, the *direction setting phase*; and the *implementation phase* (Gray 1989; Margerum 1999). The *problem setting phase* identifies the stakeholders and comes to a common definition of the problem. The *direction setting phase* establishes ground rules, engages in joint fact-finding and ultimately reaches consensus. The *implementation phase* is where agreements are put into action.

David Straus (1999) uses a slightly different four-phased model to capture the chronological order of most collaborative processes. The *start-up phase* is where people within a community acknowledge that a problem exists beyond the power of a single person to solve. Next is the *process design phase*, which determines if a consensus approach is appropriate, who should be involved in the process, and how the process should initially be structured. The *consensus building phase* is an iterative interaction where participants in the process agree on ground rules, engage in joint fact-finding, come to a common definition of the problem, and possibly reach consensus about a course of action. The results of the consensus building phase are dependent on the anticipated outcomes or goals for the process. Finally, there is the *implementation phase* where the agreements reached in the consensus phase are put into action.

Figure 1: Straus's Four-phased Model of Collaboration



Straus's four phases can be evaluated along several different evaluation categories identified by a variety of scholars. Figure 2 lists these different potential measures of evaluation. Three elements in particular (Joint Ownership, Common Understanding of Conflict, and Joint Fact Finding) are particularly relevant for the discussion of GIS' role in collaborative processes and will be discussed in more detail later in this paper.

Figure 2: Summary of Literature Review Evaluation Criteria

Process Phase	Evaluation Category	Authors	Key Points
Process Design Phase	Representative of Interests	Susskind & Cruikshank (1987), Carlson (1999), Innes (1999), Gray (1989)	Clear process of selection; Need for inclusiveness, need to limit size
	Adequate Resources	Susskind & Cruikshank (1987), Carlson (1999), Innes (1999), Amy (1987), Mattessich etc.(2001)	Need for adequate resources, Need for adequately trained facilitator
	Joint Ownership	Mattessich etc.(2001), Gray (1989),	Collective responsibility for the outcome
Consensus Phase	Clear Ground Rules	Lowry, Adler, and Milner (1997), Mattessich etc.(2001)	Clarity about how decisions are made; Participants set ground rules
	Shared Purpose	Innes (1999), Innes & Booher (1999) Mattessich etc.(2001)	Purpose should be real, practical and shared by the group
	Joint Fact-finding	Erhmann and Stinson (1999), Gray (1989)	Participants work together to determine how data should be collected, analyzed, and interpreted.
	Common Understanding of Conflict	Erhmann and Stinson (1999), Gray (1989)	Need to reach consensus about the problem in order to move forward
	Respectful Interaction	Innes (1999),Mattessich etc.(2001)	Should include face-to-face discussions where participants are listened to and shown respect.
Preliminary Outcomes	Creativity / Challenges Assumptions	Innes (1995), (1999), Innes and Booher (1999)	Enables and encourages participants to "think outside the box"
	Group Learning	Forrester 1992, Lowry, Adler, and Milner (1997)	Participants have the opportunity to learn form each other and to create a "transformation of awareness"
	Social Capital	Innes and Booher (1999), Innes (1995), (1999)	Personal and working relationships and networks are established

Patsy Healey defines *spatial planning* as the practice of managing co-existence in shared spaces and maintains that communicative planning is ideally suited for this task (Healey 1997). Spatial planning also includes the concept of "place-making" and often involves conflict over the spatial identity or the character of an area (Healey 1997). Conflict over shared space is particularly relevant at the neighborhood level. The goal of communicative & spatial planning at the neighborhood level is to manage co-existence and create policy decisions, or informal agreements, that will be viewed as fair by all interested community members.

Spatial planning and public participation have recently begun to be thought of in an integrated fashion. Public Participation GIS (PPGIS) represents a broad notion that the spatial visualization and analysis capacities inherent in GIS present a unique opportunity for enhanced citizen involvement in public policy and planning issues. A second annual conference dedicated to PPGIS occurred in 2003 and a recent book dedicated to such issues has recently been published (Craig, Harris and Weiner 2002). The focus of PPGIS remains quite undefined (Jankowski, Piotr and Timothy Nyerges, 2003; Schlossberg and Shuford 2003; Tulloch 2003), ranging from issues of "grassroots community engagement (Craig, Harris and Weiner 2002, 5) to making public data such as parcel and property tax records more 'public' through maps on the internet. What scholars and practitioners do see in common in PPGIS is that spatial issues are best addressed with spatial approaches and that GIS can facilitate a broader set of participants in the planning process due to its visual orientation (Al-Kodmany 2001). In this sense, a map can facilitate mutual understanding, common agreement about basic facts, and be used to develop trusting relationships across a diverse set of participants. It is important to note that although we think of GIS as a tool to creating maps, the process that leads to final map creation may be more appropriate in terms of collaborative planning. Similar to participatory or community-based research methods, where joint expert-community problem definition and research is as much about building trust and social capital through the research *process*, PPGIS offers the ability for the *process* of spatially investigating an issue to yield positive returns in terms of group dynamics, consensus building, and joint planning.

RESEARCH METHODS

The research clearly took a case study approach, which uses empirical inquiry to investigate a situation in its natural context where boundaries between that context and the phenomena being investigated are unclear (Yin 1993). Data was collected through direct observation, a survey of Task Force participants, and through semi-structured personal interviews with Task Force members. The Task Force met five times from early 2002 through early 2003. All meetings were tape recorded and key themes were transcribed. Surveys were conducted through the mail and were sent out just prior to personal interviews in order to gain some basic background and opinions in order to allow the personal interviews to explore certain significant topics more deeply. Ten of the eleven people involved in the Task Force were interviewed. Interviews were conducted after the fourth meeting in order to both understand and reveal the story of the Task Force process. The strength of this research methodology is that it combines direct observation with surveys and interviews. This method of using several data collection techniques is valuable in evaluating collaborative decision making, but is rarely used due to the time involved and funding constraints involved in directly observing an entire collaborative process (Innes 1999).

CASE STUDY

In November of 2001, the City Council unanimously adopted a motion directing the City Manager to develop and initiate a public process to involve neighborhood groups, residents and providers in analyzing social service siting, impacts, and needs and return to the city council with options and recommendations. The City Manager and additional staff responded to the City Council's motion by convening a collaborative task force made up of neighborhood residents and social service representatives to further explore the issue and address resident's concerns.

The participants of the task force included four social service representatives, four neighborhood representatives, two neutral participants, a city lead-staff person for the issue, and an additional city staff facilitator. The facilitator was present at the first three meetings, but not subsequent two. The city staff person asked the Neighborhood Leaders Council, an organization with representation from each neighborhood, to identify neighborhood volunteers to serve on the committee. Social service representatives were chosen through the Human Services Commission, a forum for social service providers. The neighborhood and social service representatives mostly either lived or were located within the two subject neighborhoods. The goal of the city staff person in organizing the process in this way was to create a balanced discussion where the opinion of the two primary groups affected were represented.

The Task Force Proceedings

The Task Force was asked to design a public process to explore the issue of social service locations per the City Council's directive. The participants decided that they should first attempt to define the scope of the issue before developing a public process. Participants identified a list of potential impacts from social services and the initial discussion focused on three underlying issues. The first issue was that social services might be creating behavioral problems that need to be mitigated. These include activities such as crime, loitering, drug use, prostitution etc. The second was that some residents in outlying neighborhoods were reported to have a hostile NIMBY attitude towards social services attempting to locate in those neighborhoods. In order to address these first two issues, the task force came up with the idea of a code of conduct: principles of conduct in which both neighbors and social service agencies would agree to adhere. The third issue was the concept of a "tipping point". The idea is that even if social services do not directly lead to any specific behavioral problems, too many agencies in any one residential area could push the neighborhood passed a certain threshold where the character of the neighborhood becomes changed. GIS resources from the University of Oregon were offered to help spatially visualize and quantify the location of social services and compare concentrations of such services to a variety of different neighborhood boundaries in Eugene.

At this point, the City staff person stated that he convened the group in order to define the issue of social service location, concentration, and dispersal. He felt that they needed to come to agreement about what to include in a definition of a social services. One of the neighbors responded that it was not necessary to get bogged down in precise definitions, but rather should focus on impacts. One Task Force member finally offered the following definition of a social service: *"Any type of service that is provided on site to clients who reside at or come* *to the site for services"*. Discussion proceeded to try to understand how this definition uniquely identified social service agencies. For example, it was unclear how the definition would distinguish between a social service agency providing mental health counseling and a local medical clinic doing the same thing. Moreover, it was unclear how a soup kitchen operated by a social service organization differed from one operated by a church – an important distinction to make because churches are not subject to the same types of land use regulation that social services and other business may be.

The discussion then shifted and the group dropped the discussion about defining social services. One of the social service providers explained the process and factors involved in siting a social service facility. The factors primarily focused on economics and client needs; however, compatibility with the surrounding neighborhood was also a consideration. The group then anecdotally tried to identify specific cases of positive and negative examples of social services. They were not able to identify a single problem social service.

As the discussion proceeded, the group focused much of their effort about the code of conduct. They were less clear about how to address the "tipping point" concept, an exercise that required specific data and a spatial analysis to understand. Voluntary GIS services were continually offered to the Task Force, but certain members continued to argue against the use of GIS because it would bog down the committee in methodological problems when there should be an implied understanding of the extent of the social service "problem".

Between two of the meetings, the social service providers on the Task Force wrote an independent letter that they wished to send to the City Council, which would either be adopted by the task force or attached to the task force's recommendations as a "minority report". The letter stated that the social service providers felt that there is no reason to discuss the issue of social service siting further at the City Council level. They reiterated that the Task Force was unable to present a single tangible example of an agency that had a detrimental effect on any neighborhood. They disagreed with any recommendation that would place additional zoning or any other standards on social service agencies beyond that which any other business or residence would incur. They stated that they were willing to work with neighborhood groups to develop informal "codes of conduct" which outline what neighborhoods have a right to expect from social service agencies located in their neighborhoods and what expectations social service agencies should have with respect to acceptance in those neighborhoods. However, they felt that it was unnecessary for the city council to be involved in these discussions. A similar letter, but with an opposing view, was crafted by some of the neighborhood representatives on the Task Force. Clearly, the collaborative spirit of the Task Force was disintegrating.

In the subsequent meeting, one of the neighborhood representatives stated that she felt the problems were "glaring" and identified three main issues. The first was that neighbors in some of the outlying neighborhoods might be taking a hostile attitude towards social services seeking to locate in their communities. The second issue is that there is a perceived association between neighborhood decline and an increase in the number of social services - the problem is that some people view this association as the cause for neighborhood decline. Finally, she mentioned that there is the larger problem of neighborhood decline in general. This reflected a different perspective from the first meeting, which focused primarily on mitigating the impacts of social services. Most of the group seemed to agree with this re-statement and felt that to understand the neighborhood decline issue there would need to be more research. Such research would need to include the spatial locations of not only social services, but other businesses, rental properties (especially with absentee landlords), and perhaps crime data. Some on the Task Force were skeptical that the City could justify paying for the costs of such a study and it was unclear whether the previously offered GIS resources at the University of Oregon would be extended to include more in depth types of data collection and analyses. Thus, the Task Force once again chose not to pursue a spatial investigation of their spatial problem.

Findings

The Task Force process was evaluated using David Straus' (1999) four-phased model to capture the chronological order of most collaborative processes and eight individual elements for analysis based on a variety of previous scholarship (see Figure 2). For the purposes of this discussion, focus will be placed on three main elements: Joint Ownership, Common Understanding of Conflict, and Joint Fact Finding.

Joint Ownership. Joint ownership implies that everyone that is participating in the process wants it to succeed and assumes collective responsibility for the outcome and success of the process. During the process design phase, determining whether participants would have joint ownership in the process is one component of determining the feasibility of using a collaborative approach. Some authors have referred to joint ownership as the most important characteristic that defines a collaborative process (Mattessich etc. 2001). Fisher and Ury (1981) developed the concept of a BATNA – Best Alternative to a Negotiated Agreement. If a stakeholder's BATNA is better than what would be expected through a collaborative agreement there is little incentive to participate in a collaborative process and/or stay at the table.

Many of the participants recognized that the issue was much more important for the neighborhood representatives than the social service providers and some of the social service providers had poor attendance at the meetings. During the third meeting on April 30th, there was only one social service representative present. In addition, one of social service providers came to only one out of four meetings. However, in three out of four of the meetings, there were at least three social service representatives present.

The problem definition was unclear to most of the social service providers and neutral participants going into the meetings and many of the participants were skeptical that a problem even existed. This put most of the responsibility to define the problem on the neighborhood representatives. One could argue that social service providers did not share the same responsibility for the success of the collaboration as the neighbors. In addition, some of the participants felt that the city staff also felt that no "problem" existed and was not genuinely interested in pushing the process forward. These factors could have hindered the success of the process. It did appear that the social service providers came to the meetings with an open mind to address a problem if it existed. In addition, they had a stake in coming to the meetings to make sure that their perspective was heard and to argue against any policy recommendations that might hinder their agency's ability to serve their clients. However, the concept of joint ownership does not seem to have been fully met by the Eugene Task Force.

The lack of joint ownership possibly indicates that a collaborative approach with an equal number of social service representatives and neighborhood representatives was not the most appropriate method of understanding the issue. Perhaps it would have been more effective to first use neighborhood focus groups to attempt to define and map the issue before engaging in a collaborative effort. Many researchers have pointed out the importance of the "Process Design Phase" in evaluating whether a collaborative approach is the best method for defining or understanding a particularly issue or conflict (Gray 1989, Mattessich et al. 2001, Straus 1999).

Common Understanding of the Problem. Unless a group can come to a common definition of a problem, subsequent efforts to collaborate will be unlikely to succeed (Gray 1989). Eight out of the ten participants disagreed or strongly disagreed that the task force came to agreement about the underlying conflict or issue throughout the course of the meetings. Many of the participants felt that the task force's inability to develop a clear problem statement was the major factor that hindered its success. One participant commented that "all of my problems with the task force come back to the issue of that there wasn't a clear problem statement".

During the first meeting, the neighborhood representatives raised the three potential conflict issues of social services creating behavioral problems, that some outlying neighborhoods were hostile towards social services, and that a "tipping point" of social services was occurring in central city neighborhoods. Social Services providers responded to the neighbors' concerns by stating that while they agreed that the neighborhoods are changing they felt that social services are not the cause of neighborhood decline, but are actually helping to reduce the problem by serving people in need of social services. One social service provider stated in the first meeting that many of his clients would locate in the Westside neighborhood regardless of whether they were in his program. He/she felt the question was "would it be in a structured environment or would they just be there". In addition, many providers felt that most social services and group homes do not contribute to the physical deterioration of the area, but often improve it by maintaining the premises better than many residential homes. One interview participant commented that the idea of the tipping point was interesting, but in order to justify singling out and treating one group differently there needs to be clear documentation.

Several of the participants in the study felt that the main reason the task force was not able to develop or agree on a clear problem statement was because the problem probably does not exist. Or if a problem does exist there is nothing that government can or should do about it. Participants pointed to the fact that the task force was not able to even anecdotally identify a single social service agency that was having a negative impact on the character of the community. One participant commented that the task force is "searching for a solution to an undefined problem". Another participant stated that they should have agreed to come up with the problem statement by the second meeting. S/he felt that if you can not come up with a problem statement by that point you are just wasting time. The Task Force's inability to define the problem leads to the final evaluation criteria factor addressed in this article, joint fact-finding.

Joint Fact-finding. The concept of joint fact-finding is where stakeholders and experts work together to determine how data should be collected and analyzed. Involving stakeholders in the process of generating, analyzing, and reaching consensus about data, helps to avoid the problem of contradictory information (Erhmann & Stinson 1999). Joint fact-finding has often been described as an effective method of helping a group of stakeholders come to a common understanding of the underlying conflict. While parties with conflicting interests will likely interpret technical material differently, they should work together to determine how data should be collected (Ehrmann & Stinson 1999). If the group cannot agree on the facts then the process will likely result in an impasse. Almost all of the participants in the Eugene Social Service Siting Task Force felt that a method of joint fact-finding, or fact-finding in general would have benefited the process. Several people felt that the lack of agreed upon data was one of the key obstacles that hindered the success of the process.

One of the major obstacles to beginning a fact-finding process was that the group seemed unwilling to focus the discussion. For example, when some of the participants attempted to clarify what to include in the definition of a social service, other participants would respond by saying that it was not necessary to get bogged down in precise definitions. This had the effect of keeping things vague and unclear. In addition, instead of using the best available data, such as a local database of social services, as a starting point for a joint fact-finding effort, the group decided the data and maps derived from such a database would not be accurate and did not pursue it further. However, other than stating that the database did not include some specific church programs, no one articulated why the database and resultant potential maps would be inaccurate.

The group could have worked together to apply filters to the map to have it reflect their concerns and combine that information with census data on group quarter living arrangements. Additional information, such as specific church programs could have been added manually. While the group may not have been able to capture the location of all social programs (the location of social services programs are often changing), it could have at least helped the group define the problem. One participant commented that “we never did the study because we assumed it would not be representative or worth doing. That’s a backward way of thinking…a way of not doing anything.” Some interview participants stated that working with the existing GIS information could have been a good starting point to come up with some agreement about the distribution of social services, but remained skeptical about what it would show. Other fact-finding ideas included door-to-door surveys and focus groups with community members.

Several people commented that despite the lack of facts, the task force deliberations convinced them that social services were not causing neighborhood decline. This was largely based on the group’s discussion of anecdotal problems related to social services and the fact that they could not identify a single problem case. While more fact-finding would have been useful to help analyze the issue, no matter how much data was collected they felt it would not have changed the final outcome. They questioned the efficacy of spending the resources on something that was clearly not a problem. “If you can’t come up with a problem statement then it is probably not worth going to the time, expense and effort of collecting data”. However, joint fact-finding may have been necessary to define the issue. One person commented that it was like one side kept saying “tell us what the problem is?”, while the other side had to respond “No, we can’t gather that data”. S/he went on to say, “I think we could have agreed at least about what type of data we would collect.” While the task force proceedings and anecdotal discussion seemed to convince some of the task force members that social service concentration was not causing neighborhood decline, others remained convinced that social service concentration did contribute, at least indirectly, to decline of their neighborhood. However, without an agreed upon analysis of the issue, the group remained stalemated.

IMPLICATIONS

Almost all of the participants felt that the lack of agreed upon data was one of the key obstacles that hindered the process. However, some participants were skeptical about whether they could justify going to the time and expense of collecting data if they could not define the problem. One response to that argument is that joint fact-finding has often been described as an effective method of helping a group of stakeholders come to a common understanding of a difficult or controversial issue. Judith Innes (1998) suggests that information becomes “intellectual capital” or shared knowledge only if it is socially constructed in the community where it is used. Even if the task force had decided that the social service concentration was not a problem, if they had engaged in more joint fact-finding they may have produced more convincing intellectual capital and may have been able to reach consensus about the issue.

GIS can provide collaborative processes a tool to engage in this joint fact-finding and mutual understanding of a problem. Whether the collaborative is something like this social service siting task force, a watershed council, or a community visioning partnership, GIS can focus participants on defining the parameters of an issue so that meaningful conversations and ideas can proceed based on a shared knowledge of the foundational issues. GIS presents a particularly powerful tool in this effort because its visual and spatial nature allows for diverse participants to come to similar understanding of complex issues more quickly because they can be “seen” and placed within a community or regional context. And when community issues to be solved are spatial in nature, it makes sense to have a spatial tool to facilitate understanding and joint ownership of the basic facts.

In the case of the social service siting task force, GIS could have provided a focus for the group discussion of the precise nature of the problem they were trying to address. It is unlikely that incorporating a GIS analysis into the Task Force process would have answered all questions definitively, especially since questions of what a social service is is not always clear. A spatial analysis of the distribution of known nonprofit organizations, neighborhood boundaries, and land use codes could have, however, focused the attention of the Task Force members on fundamental issues. That is, the Task Force eventually gave up on trying to define a social service and agreed (some grudgingly) that precise definitions were not useful – that negative impacts of some social service clients are well understood and defining them precisely would not aid in that general understanding. However, had the Task Force started looking at maps that showed the placement of nonprofits, businesses, and large apartment complexes, and then calculating densities by neighborhood, the Task Force may have restated its problem from one that focused on social service agencies to one that focused on negative behaviors that impact residential quality of life.

While it is impossible to say that the Task Force's eventual outcome would have differed had they pursued a spatial approach to their spatial problem, it is clear that using maps would have helped the group more clearly articulate the problem they were trying to address. If the task force had engaged in a more rigorous method of analyzing the data that was available it may have helped them produce more "intellectual capital" and enabled them to clarify, redefine, or come to an agreement about the problem. Anyone who has shown a neighborhood map to neighborhood residents knows that the first thing people look for is where they live and then they start checking the accuracy of what is shown. This simple exercise would have advanced the Task Force's efforts, in one hour, far beyond what it was able to achieve in the year that they met. Many of the participants' frustration with the process centered around their inability to analyze the issue and eight out of the ten participants stated that they failed to come to a mutual understanding of the problem. Even with incomplete data, having all ten participants look at even a single map (or better yet, walk the streets together collecting their own data) with the single ill-defined variable of "social service", we believe they would have more quickly come to understand how central it was to more explicitly define the problem the Task Force was charged to investigate.

Collecting and analyzing information has been at the heart of the planning profession since its inception, especially during the height of the technocratic rational period of the 1950s and 1960s, where planners were seen as value neutral experts that provided objective data collection and analysis for decision-makers (Innes 1995).. Communicative planning offers a new direction for the field of planning that attempts to take a more "bottom-up" approach and better account for the pluralism of society. However, the term "communicative planning" is a somewhat vague notion without clear principles for practice, as is the notion of public participation within a GIS context (Schlossberg and Shuford 2003; Tulloch 2003). Allmendinger (2001) states that one of the main criticisms of communicative planning is its failure to make the jump from theory to practice

In light of this research, the model of collaboration and consensus building, and especially the concept of joint fact-finding have important implications as a guide for local government public participation efforts. Many local government public participation efforts have attempted to involve community members in public policy decisions. However, the policy decision making process is still based on information collected and analyzed by professional staff, especially when it comes to the use of technological tools such as GIS. By contrast, involving various stakeholders in the collection, analysis, interpretation, and presentation of data to be used for decision making over matters of shared space captures the spirit of "communicative rationality". This is especially important for the emerging field of PPGIS, where the visual presentation of data is such a powerful tool. Additional research should further explore the notion of joint fact finding as a guiding principle for communicative planning practice, and particularly for PPGIS. As the use of collaborative techniques and GIS in public participation efforts increases, it is critical that practitioners understand when these public participation methods are appropriate and when other methods would be more effective. PPGIS and collaboration methods should be carefully employed. Many researchers have developed evaluation criteria for collaborative process (see Figure 2). Similarly, there is a strong need for researchers to develop clear evaluation criteria that can be used by practitioners that specifically addresses the emerging field of Public Participation GIS.

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