Project Summary

This project examines the urban spatial and political impacts of two related developments in US cities: the growing adoption and use of geographic information systems (GIS) by community-based organizations, and the expanding responsibilities being assumed by these organizations in urban planning, revitalization, and service delivery. The primary research objective of the project is to carry out a long-term ethnographic study of the production of GIS-based data and maps that analyze neighborhood needs, resources, and conditions; and the application of this spatial knowledge within local political processes that shape urban space at neighborhood level. The educational objective of the project is to implement service learning components into two undergraduate geography courses in which students will provide technical assistance for the community-based GIS analysis being studied as part of the project's research component. These objectives are to be accomplished through an annual cycle of integrated research and educational activities carried out in collaboration with two community development organizations in a distressed inner city neighborhood in Chicago. Directed by staff and residents from the case study organizations, the project will create a spatial data library for use in their neighborhood revitalization activities. Students in the geography courses will work in collaboration with the organizations to create GIS-based spatial analysis projects using these data. The central research questions of the project will be examined using information gathered through participant observation of student-community interaction in educational activities; ethnographic interviewing of participating organization staff and neighborhood residents, as well as local government officials with whom the organization works; and analysis of maps and reports produced for the community-based project.

With respect to its intellectual merits, this project will advance theories in urban geography and societal studies of GIS, by fostering a greater understanding of the role that spatial analysis technologies play in the construction of space and place, and conceptualizing the changing nature of democratic practice within local level political processes through which urban spatial change is negotiated. The project will advance knowledge about how urban spaces are constituted and transformed in the contemporary US city, through its examination of the interdependency of spatial analysis technologies, GIS-based knowledge construction, and the negotiation of agency and authority between civil and state actors in urban governance. The educational component of the project advances knowledge about effective pedagogy in urban geography and GIS, including ways of structuring experiential and service learning activities so that students are best able to connect conceptual and applied geographical knowledge, and critically reflect upon educational and societal importance of their active learning efforts.

The ideas to be developed in this project will have an important impact in ongoing debates about effective practices for improving quality of life in US inner city neighborhoods. Through detailed knowledge about the changing roles and relationships of civil and state institutions, and the impact of different forms of knowledge, information and technologies within urban political processes, the project findings will inform efforts to create effective strategies and mechanisms for fostering urban revitalization. Finally, the model for integrated service learning and participatory research advanced in this project has the potential to reconfigure our understanding of the roles that universities play in the production and reproduction of urban spaces.

Project Description

a. RESULTS OF PRIOR SUPPORT – **not applicable, no prior support**

b. PROJECT DESCRIPTION

Research Project Statement and Key Research Questions

Over the past decade, non-governmental, non-profit, and voluntary citizen organizations have take an increasing responsibility for planning, problem solving and service delivery in U.S. cities. Simultaneously, a growing number of these organizations have begun utilizing spatial analysis technologies such as geographic information systems (GIS) to inform their efforts. Both of these developments have captured the attention of geographers, as each involves important shift in the processes through which local level urban change is negotiated, planned, and implemented **(**c.f. Brenner and Theodore 2001; Craig, Harris, and Weiner 2002). Theorization of the interdependent nature of these two developments remains under-developed in either urban geography or critical GIS research. The proposed research seeks to better understand the mutually constitutive relationship between GIS-based knowledge production by community-based organizations, and the changing role and power of these institutions within urban political processes shaping land use, neighborhood revitalization, and community development efforts. "Community-based organizations" refers to organizations whose activities are geographically specific within a locality – directed at fostering change within a defined area in a city – with no implication that the social community represented is singular, unchanging, or uncontested. This research will develop stronger conceptualizations of how GIS use by such organizations, and application of the knowledge produced alters the processes and socio-political relations through which urban spaces are constituted and transformed. The project will advance urban geography and social studies of spatial technologies by building a better understanding of changing relationships between state and civil society in contemporary urban governance practices shaping city spaces, and conceptualizing the significance and impacts of spatial technologies and knowledge in these changing relationships and practices.

Key research questions include: How and through what means does GIS-based spatial knowledge production by community-based organizations alter urban political processes through which neighborhood level change in urban spaces is negotiated, planned and implemented, and what are the implications of these changes for the relationship between the state and institutions of civil society in urban governance? How do changing urban governance practices within planning, revitalization, and service delivery affect the priorities, strategies, and goals advanced through GIS-based spatial knowledge production by community-based organizations? What forms of democratic practice and citizen participation are fostered through these changing governance strategies? More specifically, within GIS-based knowledge production by community organizations, what is the relationship between local state agendas, priorities and strategies for revitalization, planning, and service delivery, and those of community organizations?

Career Development Plan

Prior Research and Education Accomplishments and Implications for this Project
The proposed research and educational activities build on the central themes that have guided my career thus far. My scholarly efforts center on understanding the constitution of space, place, identities and power relations through locally inscribed collective action and citizen organizations. In particular, I consider the urban political significance of the knowledge and discourses produced by marginalized social groups and institutions based in socially, politically, and economically disadvantaged places. My earliest work examined these themes in the context of local level environmental justice activism, and negotiations of identity and "community" by lesbians occupying inner-city neighborhoods (Elwood 1998, 2000). Most of my research, however, examines these themes through study of the complicated interface between GIS-based knowledge production by community-based organizations and the social, political, and spatial impacts of that knowledge within urban planning, problem solving, and revitalization.

My work in this area began with analysis of the unique spatial information technology needs and applications of community organizations and efforts to conceptualize key local support structures for GIS use in this context (Craig and Elwood 1998, Elwood and Leitner 1998; Leitner, Elwood et al. 2000). I continued with extended study of the ways in which GIS use in community-based planning alters discourses of decision-making about neighborhood space, with unequal impacts upon the kinds of knowledge considered relevant in neighborhood revitalization, and upon the participation and authority of social groups within a neighborhood (Elwood 2000). Most recently, I have focused upon spatial technologies and knowledge production as inextricably related to the changing nature of urban governance and its shifting role for institutions of civil society (Elwood 2002a, 2002b, 2002c, Elwood and Leitner 2002). The proposed project is designed to extend this interest through greater understanding of the forms of spatial knowledge and democratic practice advanced through community-based GIS use in urban planning and problem solving. As well, the research and educational activities in this project continue my focus on qualitative methodologies and participatory research approaches (Elwood and Martin 2000), and on the significance of university-community collaboration in fostering critically informed scholarship and pedagogies (Elwood 1996 and 2000d).

Pragmatically, my research activities to date have developed a strong background in creating and sustaining research partnerships with community-based organizations. To prepare for the proposed project, I have been building relationships with Chicago area organizations over the past 2 years, and seeking to better understand the local political context of citizen participation and urban revitalization in which these groups are embedded. As well, I have recently completed several interviews with Chicago community-based organizations concerning the local support infrastructure for spatial data and technology provision to citizen institutions.

Goals
Through this project and beyond, I seek to position myself as an active and innovative contributor in geography, through activities that closely interweave research, education, and service. In my scholarly activities, I am working to be a leader in urban geography and critical GIS research, through research that further intersections in thought and theory from these sub-areas of geographic research. The proposed project would further this goal through its potential

research impacts, which include building stronger theorization of 1) the role and impacts of geographic information technologies and spatial knowledge in shaping urban spaces through processes of planning, revitalization and service delivery; and 2) the changing engagement of grassroots groups and other civil institutions in these governance processes through which urban change is negotiated. These contributions are most significant within urban and political geography, critical GIS research, and social studies of technology. The project design will advance thinking in geography concerning participatory research methods and experiential learning pedagogies.

My goals as an educator are two-fold. I seek to build creative and effective learning environments for undergraduate students with diverse backgrounds and learning styles, and build knowledge about effective practices and curricula in urban geography and GIS that foster students' critical understanding of socio-spatial inequality and their own social and political roles as citizens. One of the ways I will pursue these goals is through design of course activities that engage students in linking experiential knowledge with conceptual knowledge – to enable critical reflection upon the social and political geographies of the places in which their experiential learning is occurring. Specifically, the proposed project will work toward these goals through two linked experiential/service learning courses in geography in which students will work collaboratively with two community development organizations. The partner organizations in this project work in Chicago's Humboldt Park neighborhood, an African American and Latino community that is one of Chicago's most distressed neighborhoods. This site and the two organizations are selected because of their theoretical significance relative to the research questions, but also because they provide an opportunity for the students to examine socio-spatial inequities and their causes and implications in U.S. inner-city neighborhoods. The service learning activities of these courses, described in more detail in sections below, further my goals in student education, but also generate key data supporting the project's research component.

The service goals of this project are situated within DePaul University's mission of urban service, which includes creating an accessible and effective educational environment for first generation college students and lower income households, and taking an active role in promoting social justice and addressing critical urban problems (Meister 1998). The students involved in the project will represent DePaul's diverse student body, in which nearly 40% are racial and ethnic minorities, nearly half are first generation college students, and many come from central city neighborhoods precisely like the one targeted in this project. In seeking to foster strong interactive relationships between the university, students, and the Humboldt Park community, this project will create opportunities for students to connect real-world experiences (their own and those of community residents) to theory and concepts learned in the classroom, and to critically reflect upon the social and political significance of these experiences and ideas. Finally, this project seeks to build capacity for spatial analysis within the collaborating organizations. This goal will be met through creation of a community development spatial data library for their ongoing use, involvement of organization staff members in GIS education throughout the project, and investment in technological infrastructure of the organizations to facilitate independent GIS use and further manipulation of projects produced by the students.

Objectives and Significance of the Proposed Research / Education Activities

There are three related sets of objectives for this project. First, I seek to build stronger theorization of the urban spatial and political impacts of GIS technologies and GIS-based knowledge production by community-based organizations as they seek change in urban neighborhoods and involvement in political processes and decisions through which these places are transformed. The project seeks to develop a better understanding of how community-based organizations are able to affect change in urban spaces through their involvement in planning, revitalization, and service delivery; and how relationships between state and civil society may be altered through deployment of GIS-based knowledge in these activities.   The primary significance of these objectives lies in their capacity to extend geographers' understanding of the role of spatial analysis technologies in the construction of space and place, the changing nature of democratic practice being fostered in urban political processes through which urban spatial change is negotiated, and the importance of spatial knowledge in these negotiations. "Spatial knowledge" here refers to representations of the characteristics, conditions, and needs of neighborhood spaces and structures. Given recent theorization of local citizens and civil institutions as increasingly marginalized in the face of neoliberal urban governance imperatives, and of urban spaces as being produced and reproduced by processes situated outside of localities, the proposed project is particularly important because it tries to understand, within this context, the remaining (or reconfigured) significance of local citizens, community-based organizations, and locally-produced spatial knowledges in shaping urban space.

Second, in undergraduate education, the principal objective of the project is to design and implement linked experiential/service learning activities in 2 geography courses - the capstone course in my department's urban geography sequence, and an advanced GIS applications course. Students in these courses will work with the two collaborating community-based organizations on GIS-based spatial analysis projects for use in the organizations' neighborhood revitalization activities. Groups of students in the urban geography course will work in consultation with community organizations to produce plans for the project goals and potential applications within organizational activities. The GIS students, using a spatial data library created and maintained for the project, will collaborate with the organizations' staff members to create the maps and analysis needed for the project. Both courses will include working sessions attended by students and organization staff to ensure community definition and guidance of student activities. As well, each course will conclude with a roundtable discussion of results, implications, and potential applications of materials produced, attended by all participants. The activities of each course will further include reflective writing and discussion of the experiential activities, so that these can be linked to the students' conceptual learning. These educational activities reconstitute undergraduate students as active and engaged knowledge producers – a key step in fostering their critical thinking skills, and underscore for them the real-world relevance and impact of geographic knowledge. Finally, these educational objectives develop a strategy for teaching GIS as a socially constructed technology – a goal that has been called for in GIS literature (c.f. Warren 1997) but remains unfulfilled by most undergraduate GIS curricula. These educational objectives extend existing efforts to consider the benefits of experiential and service learning in the context of undergraduate geography education.

The final objective of the project is to develop a sustainable model for university-community collaboration in community-based GIS projects, and developing internal capacity for spatial analysis in community-based organizations. Such a model would make a tremendously

important contribution to the theory and practice of community-based GIS. All existing empirical research points to the extreme difficulty community-based organizations face in sustaining GIS use, with further observation of the challenges of sustaining university-community collaborations in this arena. The project design and activities outlined in this proposal lay the groundwork to develop a well-tested and robust model of community-GIS use and university collaboration that enable community-based organizations to surmount these challenges. The project will accomplish these objectives through tangible skill building of organizational staff members, and through involvement of the organizations throughout the process of planning for, creating, and applying GIS-based spatial knowledge. Each year of the project, one staff member from each organization will enroll in DePaul's introductory GIS course. This multi-year commitment to internal skill building is essential given the relatively high staff turnover in community development agencies, and should increase the likelihood of retention and sharing of expertise in the organizations. Close collaboration through all aspects the GIS process also plays an important role in sustaining community GIS capacity – ensuring not just software skills but broader understanding of process of GIS-based knowledge production. The long term process of data development and skill building supported under this project will additionally lay the groundwork for university-community GIS collaboration beyond the duration of this proposed project, through the ongoing collaboration of the Humboldt Park community and DePaul's Egan Urban Center, a participatory urban research institute.

The Relation of the Research to the Current State of Knowledge in the Field

Research activities of this project are informed by and seek to advance existing knowledge in geography concerning the social, political, and spatial impacts of GIS use, and of the shifting role and significance of citizens and local civic institutions within urban political processes shaping urban space and place. Study of the societal implications of spatial information technologies is rooted in the work of a number of scholars who have studied the social construction of GIS the kinds of spatial analysis and representation of space, place, and people advanced through this technology (Aitken and Michel 1995, Harris et al. 1995, Lake 1993, Pickles 1995, Sheppard 1993, Yapa 1991). These examinations of the epistemological assumptions about space and place inherent in GIS technology and types of knowledge and decision-making practices likely to be fostered through its application share a common concern with the technology's purported tendency to advance quantitative, rationalist forms of spatial data and logic. One of the crucial contributions of this early work is its identification of knowledge construction as a primary process through which the social, political, spatial impacts of the technology occur. This conceptualization underlies the research investigations of this project by suggesting the following questions to be explored: What kinds of spatial data and community knowledge do the community-based organizations deem important and legitimate for inclusion in GIS analysis? What representations of and knowledge about community space – particularly conditions, needs, and resources – are produced under community-directed GIS analysis?

Critical GIS research has particularly focused on the use of technology by and its implications for socially, politically, and economically marginal communities, organizations, and social groups. Case studies from around the world suggest a rapid expansion in GIS use in community, grassroots, and non-governmental organizations, in spite of the financial, time, and expertise

limitations they face and profile a wide array of successful strategies for fostering community-based GIS use. Responding to such case studies, Craig, Harris, and Weiner (2002) emphasize that the impacts of GIS are highly context dependent, shaped by and responding to the particular socio-geographic situations in which they are utilized (See also Barndt 1998, Carver 2001, Elmes 2001, Leitner et al. 2000). The research questions and goals guiding this project are informed by this emphasis on the context-dependency of GIS use and impacts, which imply a need to develop situated theoretical frameworks in which the impacts of GIS and GIS-based knowledge are conceptualized as inextricably connected to and affected by the context in which they are embedded. For the proposed research, such a framework implies examining precisely how knowledge and authority are constructed and negotiated in GIS-based knowledge production <u>and</u> its deployment in urban political processes that constitute urban spaces. What priorities, activities, and agendas of community-based organizations are informed transformed, or initiated using GIS-based knowledge, and how? How and in what interactions and negotiations is this knowledge deployed by community-based organizations as they participation in local politics of urban revitalization and community participation?

Drawing upon these understandings of the contextual nature of the impacts of GIS, and the important role that spatial knowledge production and application play in fostering these impacts, the research component of the proposed project is further informed by earlier conceptualizations of the mechanisms through which they impacts occur. In previous research (Elwood 2002a), I argued that GIS use by community-based organizations altered the participation and power of citizens and community organizations by shifting the language, practices, and underlying logic and priorities of community decision-making and neighborhood revitalization. The design and methods of this past project produced data useful in explicating the impacts of GIS within a community's own dialogue and decision-making, but with a much more limited capacity to conceptualize how and with what impacts GIS-based knowledge was deployed by these organizations in the broader urban political arenas in which they engage – one of the central issues explored in the research component of this project. In this focus, the project directly engages ideas being generated in geography and urban studies concerning the implications of changing urban governance practices for citizens and community organizations.

For the past decade, scholars have studied the changing involvement of citizens and voluntary organizations in urban planning, revitalization and service delivery, situating this development as part of a move toward participatory planning (c.f. Healy 1997, McCann 2001), collaborative governance (Kearns and Paddison 2000, North 2001), or a neoliberal agenda of downsizing the state, with devolution of key local state responsibilities to community organizations and local citizens (Brenner and Theodore 2001, Jessop 2001). Concerns are raised about declining resources available to citizen organizations to carry out these responsibilities (Boyte 1989, Grieder 1992, Jacobs 1992, Putnam 1995), and about whether these new responsibilities are accompanied by a parallel expansion in community voice and power in urban decision-making (Fisher 1994, Handler 1996, Hasson and Ley 1994, Lake and Newman 2002). Others worry that the neoliberal policy regimes or purportedly "collaborative" governance strategies under which this expansion is occurring have the potential to pre-occupy citizens and voluntary organizations in the service of state priorities (Peck and Tickell 1994 and 2002, Taylor 2000), and to limit democratic debate in urban politics by situating these organizations within state agendas for neighborhood revitalization and other kinds of urban spatial change (Atkinson 1999, Gough

2001, Taylor 2000). Within these debates, other scholars argue that the expanding responsibilities and activities of community organizations in fact create new spaces of engagement that may be advantageous. These studies are premised upon an understanding that citizens and community organizations continue to be active agents in the negotiation of urban spatial change. They emphasize opportunities for community organizations to formulate of new alliances with the expanding range of actors/institutions involved in urban governance (Kearns and Paddison 2000), to create alternative strategies and priorities for action (Sandercock 1998), and to develop new capacities and knowledge that strengthen the basis of their engagement in urban political processes affecting their communities (North 2001, Taylor 2000, Maloney et al. 1994).

Debates within this body of knowledge inform the proposed project in several ways. First, they outline important new developments within the urban political context in which community-based GIS use is situated – particularly highlighting current shifts in the way that priorities, practices and agendas for urban spatial change are mutually constructed and negotiated by state and civil actors and institutions. As well, just as GIS research conceptualizes knowledge construction and application as critical to understanding the socio-spatial impacts of GIS, some scholars with the urban governance debates see construction of knowledge and its application to community-level activities and priorities as essential components in ensuring an active and influential role for these organizations in the new urban political context in which they operate. The research component of this project thus conceives of knowledge and practices developed within the changing structures of urban governance as emerging from interaction among state and civil actors and institutions. Under this conceptualization, key questions to be explored in this project include what sort of knowledge and authority do community-based organizations construct in their activities and interactions with the local state, and what are the relationships between this knowledge and that produced by state actors and institutions with whom these organizations interact? My early proposition would be that community-based organizations actively modify the priorities and strategies advanced in their GIS-based knowledge production with specific attention to particular situation and audience to be engaged.

In sum, the research activities of the proposed project are motivated by the need for stronger theorization of the complex interdependencies between spatial analysis technologies, GIS-based knowledge construction, and the negotiation of agency and authority by civil and state actors within urban governance. Development of these ideas will foster better understanding of the processes through which urban spaces are constituted and transformed in US cities. The research component rests on an assertion of the centrality of knowledge production and application to the active engagement of community-based organizations in spatial decision making processes affecting their communities, and seeks to understand the mutually constitutive involvement of state and community actors in negotiating priorities and practices for urban spatial change.

The ideas developed through the research activities of this project are of course shaped by the local context in which they are conducted. Chicago has a lengthy history of community organizing that has been somewhat more focused upon labor politics than explicitly "place-based" politics. Place-based politics refers to the local decision-making processes that explicitly constitute and transform urban spaces. In Chicago, local state institutions instead have attempted to channel citizen involvement in place-based politics through the city's ward system and

aldermanic decision-making processes (Bennett 1997, Ferman 1998). Thus, I expect the processes of GIS-based knowledge construction and application studied in this project to involve negotiation of priorities and goals for neighborhood transformation between community-based organizations and the individuals and institutions who participate in place-based politics through the aldermanic system. Chicago has a history of limited public information access (Mayfield et al. 1999), and my preliminary investigations for this project show a relative absence of local government efforts to ensure public availability of information, or support digital data provision and GIS access for community-based organizations. In light of these conditions, I expect that GIS-based knowledge production by these organizations to have a groundbreaking impact upon the negotiation of place-based politics in Chicago, perhaps enabling clearer insight into these impacts than has been possible in case studies that have been conducted in more progressive local state contexts of information access and citizen participation.

Relation of Education Activities to Knowledge of Effective Learning in Geography

The educational activities of the project are informed by and contribute to current knowledge about effective learning in human geography and GIS in higher education. The close integration of research and education activities in this project, in which student learning activities will play an essential role in producing knowledge necessary for achieving the research goals, respond to Warf's (1999) argument that geographic research and education can and should be practiced as mutually constitutive. The experiential and service learning activities undertaken in the project respond to a growing body of knowledge concerning their positive societal and educational implications. Scholars have shown experiential learning to be an effective strategy for helping students link abstract and applied knowledge (Kolb 1984), further illustrating how service learning can foster active and responsible citizenship (Kahne et al. 2000, Varlotta 1996), and critical examination of societal stratification along lines of race, class, gender, and ethnicity (Densmore 2000).

A growing body of knowledge about the particular significance of experiential and service learning in geography informs the design of the educational activities in this project. Some geographers contend that geography education is rooted in the same constructivist theory of learning through experience, reflection, experimentation, and evaluation that inform service and experiential learning (Dorsey 2001). Constructivist theories of learning further understand knowledge as actively produced and revised by students, teachers and communities (Merrett 2001). This emphasis on the production and modification of knowledge through social interaction has a particularly important role to play in student learning in this project, because it reinforces one of the key learning goals of the course – understanding the production and impacts of GIS-based knowledge. This overlap in student learning goals and assumptions guiding the learning process will, I expect, foster stronger analysis and learning by the involved students. Geographers have further emphasized the possibilities of promoting social justice through the constructivist pedagogy of service and experiential learning (Flint 2002, Merrett 2001). To these ideas about the positive impacts of service and experiential learning for geography education, I would add that these approaches make the important contribution of helping students understand the relevance of geographic concepts for understanding and fostering change in the spaces and places they inhabit. This linkage of conceptual and applied knowledge is essential in geography education at university level where, in spite of strong

national progress toward ensuring geography education at lower levels, many undergraduate students have had little to no prior exposure to geography.

The service learning activities incorporated in the educational component of this project are informed by Cone and Harris' (1996) conceptual model for service learning. This model draws upon Kolb's (1984) more widely known experiential learning cycle, but more explicitly defines instructors, students, and community members all as active agents in the process of knowledge production and learning. This conceptualization is essential to fulfilling the research objectives, educational objectives, and community capacity building objectives that are woven together in this project. Cone and Harris' model involves the following steps: 1) definition of the service tasks by all participants in pragmatic and conceptual terms, 2) engagement of students in experiential tasks and in critical reflection upon the process and knowledge produced, and 3) promotion of "mediated learning" forums in which the instructor guides students in developing greater understanding of the meaning and significance of the knowledge created, within community and scholarly settings. While Cone and Harris conceive of community members as primarily present in the first step, I involve them throughout to strengthen the student and community learning that can occur, and to create forums for participant observation that will generate data for the research component of the project.

The activities of students enrolled in *Geography 333: City Problems and Planning* and *Geography 245: Community-Based GIS in Theory and Practice* will be structured around this cycle of activities and learning. I will promote the courses to students as linked, because I expect the strongest learning to occur for those students involved in the entire process of planning and producing the community spatial analysis projects. Each course will include two to three student community working sessions, and a capstone roundtable discussion – forums through which much of the task definition, experience, reflection and mediated learning will occur. In Geography 333, participants in the working sessions will lay out the goals and potential applications of the community spatial analysis projects, and in Geography 245 these sessions will provide an opportunity for community members to direct the implementation of these projects and provide in-progress assessment and ideas for modification of the maps and analysis. In each case, these working sessions integrate task definition into experiential activities. Critical reflection and mediated learning from these activities will occur in follow-up discussions and in written field journals. Students will be asked to reflect upon questions that might include: What types of information and data are being prioritized by the community in these projects? What are the "targets" they envision for this project – places to change, problems to solve, people to inform, or political processes to influence? As you reflect on the maps and analysis the community wants to produce, what sort of "story" is the organization trying to communicate about spaces, places, and people in the community? What do these stories suggest to you about capacity of and strategies through which community-based organizations try to create change? Seminar discussions relating course readings to the ideas students produce in these reflections will enable further guidance of the mediated learning process. The roundtable discussion of results, implications, and potential applications of materials produced, attended by all participants, also encourage such reflection and mediated learning. My observation of students as they participate in the interactive forums built into these two courses, together with review of their reflective field journals, will provide a rich source of information through which to assess their learning.

The experiential learning design of Geo245 responds especially to needs within GIS education. Institutions such as the National Center for Geographic Information and Analysis and University Consortium for Geographic Information Science advocate active learning methods in GIS education as well as inclusion of societal implications of GIS within these curricula (Kemp 1997, Kemp and Wright 1997). In spite of these efforts, discussion of GIS pedagogy is noticeably absent the literature on experiential and service learning in geography. Embedding GIS education within experiential service learning, as this project seeks to do, has tremendous potential to advance understanding of how to integrate conceptual and "practical" learning in GIS courses – identified in the GIS education literature as a key challenge. As well, service learning in GIS has potential to encourage students to thoughtfully consider the implications of maps and analysis produced reflect upon the possibilities of employing GIS to highlight and challenge spatial inequity.

Outline of the Plan of Work

The proposed project is designed as an annual cycle of linked research and education activities. While there is some degree of overlap, the bulk of education activities are concentrated in DePaul's Winter and Spring Quarters, and with research activities and analysis concentrated in the summer and in a 6-week break between Fall and Winter Quarters. Evaluation and revision of research and educational activities will occur throughout. Project activities will begin with creation of a spatial data library for use by the participant organizations. The data library will include demographic, housing, and economic data from national, state and local sources, neighborhood knowledge developed by the partner organizations, and digital photos taken by project assistants and community residents. These data will be used in the two experiential learning courses, as the students, community organizations and I carry out each annual cycle of spatial analysis project planning and implementation. Finally, project assistants will create and maintain a project website through which the digital data and maps will be accessible to the community organizations on an ongoing basis. My own participant observation of these various university-community interactions and analysis of materials produced in these activities, together with annual interviewing of participating community members, organizational staff, and local government officials will generate a rich data set informing the project's research goals.

Table 1. Schedule of Research and Education Activities

	Research Activities	Education Activities
Summer 2003	• Meet with community organizations to define data needs for data library • Preliminary interviewing with organization staff and local government officials to build understanding of place-based politics in Chicago.	• Develop course plans and materials
Fall 2003	• Inventory/collect all relevant data held at DePaul to be included in data library • Gather local government and community data for data library • Initial spatial analysis project planning	• Finalize new course approval for Geo 245, experiential learning approval for Geo333. • Student recruiting

	Research Activities	Education Activities
	with community organizations • Finalize Human Subject approval for Geo333/Geo245 • Purchase and set up hardware & software at community sites	
Winter 2004	• Finish data library development for first iteration of courses • Observation of student-community working sessions, roundtable discussions • Evaluation of goals and procedures	• Geo 333 (creation of spatial analysis project plans and goals for each group) • Student-community working sessions and roundtable discussions • First 2 community participants enroll in DePaul's Introduction to GIS course
Spring 2004	• Observation of student-community working sessions, roundtable discussions	• Geo 245 (implementation of spatial analysis project plans with each group) • Student-community working sessions and roundtable discussions
Year 2	Research Activities	Education Activities
Summer 2004	• Interviews with organization participants and local government officials • Compilation / analysis of in-progress field notes and student field journals • 1st projects/maps added to web site • Acquire/learn qualitative data analysis software program • Update / expand data library for upcoming year	• Revision of course plans / activities based on student and community evaluation • Produce community report • Prepare Human Subject renewal for upcoming year's activities
Fall 2004	• Analysis of data gathered to date • Finish interviews from summer • Continue collection / analysis of any organizational documentation using spatial analysis project results	• Planning meetings with participating organizations to evaluate / revise course activities and spatial analysis project outcomes
Winter 2005	• Begin writing journal articles of preliminary results.	• Continue as in Winter 2004
Spring 2005	• Continued writing and analysis	• As in Spring 2004
Year 3	Research Activities	Education Activities
Summer 2005	• As in Summer 2004: interviewing, document collection and analysis, update data library and web site	• Evaluation and revision, as in Summer 2004.
Fall 2005	• As in Fall 2004	• As in Fall 2004
Winter 2006	• As in Winter 2004	• As in Winter 2004
Spring 2006	• As in Spring 2005	• As in Spring 2005
Year 4	Research Activities	Education Activities
Summer 2006	• As in previous summers – interviewing, analysis, data maintenance, evaluation / revision of procedures	• As in Summer 2005 • Additionally, prepare for Year 4 offerings of Geo 245 and Geo 333
Fall 2006	• Research leave for intensive midpoint analysis, continuing activities begun in summer 2006: extended interviews, compilation and analysis of all data gathered to date, continued preparation / revision of journal articles	• (research leave)

Winter 2007	• As in Winter 2006	• As in Winter 2006
Spring 2007	• As in Spring 2006	• As in Spring 2006
Year 5	Research Activities	Education Activities
Summer 2007	• Interviewing • Transcription • Write book prospectus	• Compile community report
Fall 2007	• Circulate book prospectus to potential publishers • Ongoing analysis and writing	• Meet with participating organizations, geography department, and DePaul Egan Urban Center to prepare plans for sustaining data library and service learning courses
Winter 2008	• As in Winter 2007	• As in Winter 2007
Spring 2008	• As in Spring 2007	• As in Spring 2007
Summer 2008	• Interviews and document analysis, as before • Final evaluation of project • Begin preliminary writing for book	• Develop project report with community participants • Final evaluation of educational outcomes

Specific Research Issues

This section outlines elements of research design, theoretical significance of site selection, data sources, research methods, and other key implementation issues, to further clarify project goals, theoretical contributions and requested resources.

1. Research Design and Field Sites

One of the key observations in existing research on GIS use and impacts for community-based organizations is the high level of local variability in these processes, even for organizations operating in the same place (c.f. Elwood and Leitner 1998). I propose that examining this inter-organizational variability may provide key insights into how GIS-based knowledge production and application are negotiated through and shaped by intersecting organizational and local political contexts. Involving two organizations situated in the same local political environment and responding to similar neighborhood conditions and needs should further clarify the nature of and reasons for this variability. The West Humboldt Park Family and Community Development Council, and the Near Northwest Neighborhood Network are both active in Chicago's Humboldt Park area, and have similar organizational missions of improving quality of life through housing improvement, expanded economic activity and job opportunities, crime reduction, and increased community cohesion. Nonetheless, each has its own history, opportunities, and limitations within politics of urban revitalization in Chicago, and may thus produce distinctly different kinds of GIS-based knowledge and rely upon different strategies for deploying this knowledge in place-based politics, with varying impacts upon the production and reproduction of space in Humboldt Park.

The selection of Humboldt Park are a field site is motivated by ongoing focus in critical GIS research upon the use of GIS technologies by socially, politically, and economically disadvantaged communities, and the impacts for these places and people. One-third of community residents live below the federal poverty level, and approximately 25% of adults are unemployed. 44% of residents are Latino and 49% are African American. Half of the housing stock in the area is seriously dilapidated or vacant. A number of practical considerations also guide selection of Humboldt Park as the site for this project. DePaul's Egan Urban Center has

worked extensively with the community for many years, developing a level of institutional and personal trust that has already significantly enhanced preparation for the proposed project. In this collaboration, the Egan Center has greatly enhanced technology access for neighborhood residents – through neighborhood computer centers and computer distribution programs, and to enhance digital technology capabilities of Humboldt Park community organizations through technical assistance and training programs. These activities further lay the groundwork for implementing the proposed project.

2. Data Sources and Issues of Validity
Project activities are designed to yield a rich array of ethnographic data addressing key research questions, particularly oriented toward developing data that enables multiple perspectives on these questions. The spatial analysis project plans produced through Geo333, and the maps produced through Geog 245 will provide insight into the spatial data and community knowledge which the participating organizations deem important and legitimate for community development applications in their communities, and a source for analyzing the representations of and about community space that produced under the community-directed GIS projects. Further data addressing these issues will be drawn from my own field notes prepared from viewing video recordings of the student-community working sessions and the capstone roundtable discussion for each course. I intend to video-record these interactions for later analysis because when they are occurring I will be occupied in facilitating the gatherings, making simultaneous research observation difficult.

Ethnographic interviews targeting two groups of interviewees will generate data about the way in which the GIS-based maps and spatial knowledge created in the project are informing and transforming organizational community development goals, strategies, and activities; as well as how and to what effect these representations and knowledge are being deployed by the organizations in these arenas of neighborhood planning, revitalization, and service delivery. I expect to interview participating organizational staff members annually, but also local government officials with whom these organizations interact in their activities. These individuals will most likely include elected and appointed members from city ward offices in the Humboldt Park area, and as well as staff members in Chicago's Departments of Planning and Development, Community Development, Housing, Zoning, and Workforce Development – the city institutions with whom these organizations work most frequently. These interviews will provide multiple perspectives upon the application and impacts of GIS-based spatial knowledge in urban political processes in which the community organizations are engaged. To further address this issues, I will collect and analyze reports, strategic planning documents and proposals produced by the organizations in which they draw upon maps and analysis produced as part of the project. To ensure thorough and rigorous interpretive analysis of the large volume of ethnographic data gathered in the project, I will code and analyze data using a qualitative data analysis software.

Given the close linkages between research and educational activities in this project – particularly the collection of key data informing the research through activities in which I and the participating students will be directly involved – it is important to clarify several issues of validity. Reliance upon data gathered in university-community collaboration to inform research questions about GIS use and impacts is evident throughout critical GIS research practice, so the

design of the project is situated within bounds of accepted research practice in this sub-area. The key variable affecting validity of project findings vis-à-vis the urban political and spatial impacts of GIS-based knowledge production and application is the role that the students and I will play in these processes. I have specifically designed the project to engage us in a technical facilitation role, and to engage the participating community members as directors of the focus, scope, and application of the spatial analysis being carried out. Additionally, my reliance on multiple sources of data and collection techniques enables triangulation of ideas within the analysis and interpretation of these data – a key strategy to ensure rigor and validity of research findings in ethnographic research (Burawoy 1991, Yin 1994).

3. Human Subjects and Dissemination of Results

I am presently working with DePaul's IRB office to prepare necessary documents for human subjects approval, including clearance for my own activities and those of the students in each class. In designing these courses, I will include readings and activities to ensure that students receive explicit training in human subjects protection and research ethics. As well, the small size of these courses (approximately 20 students) will ensure that I am further able to provide individual mentoring throughout these courses. In Geo245, I will particularly highlight ethical issues in GIS, to try to make more transparent the ethical issues inherent in data acquisition, analysis, and representation processes in which the students will be engaged.

I will disseminate results of the project in academic forums, the Humboldt Park community, and broader Chicago community development forums. Scholarly dissemination will take several forms and target several research areas in geography. I expect to produce multiple manuscripts for dissemination in urban geography, GIS, and geographic education journals. In the 2 years following completion of the project, I plan to produce a book focusing on the research results of the project, targeting the book toward an audience in urban geography, urban politics, community development. Throughout, I will make presentations at academic conferences focusing upon the project's research and educational initiatives. In terms of community dissemination, all data developed for the spatial analysis data library and materials produced in the spatial analysis projects will be available to the partner organizations, and will be disseminated in local community development and neighborhood organizing forums such as the Great Cities Conference – an annual gathering of scholars and practitioners to share results of research and action throughout Chicago. Data and results will also be shared with Humboldt Park's many other community organizations in presentations, and through the project website. This process will be facilitated by the ongoing partnership between DePaul's Egan Urban Center and the Humboldt Park community. I am particularly committed to this local dissemination of data and results, given the underdeveloped infrastructure of local support resources for community-based spatial analysis.

Specific Education Issues

Having previously described the educational goals, activities, and specific strategies to be advanced in this project, I focus here on implementation issues and feasibility. An important element in the design of the educational component is the inclusion of two courses, rather than simply focusing on a single GIS course. At a philosophical level, incorporating Geo333 into this project provides opportunity to engage students in thinking critically about the politicized

processes through which urban spaces are created and modified, and to examine the active agency of citizens and civil institutions in this process. At the practical level, the spatial analysis projects to be produced cannot be completed from start to finish in a 10-week undergraduate course. With an eye toward maintaining a feasible workload in light of my other job responsibilities, I have targeted Geo333 because it is an existing course within my department's curriculum, making Geo245 the only new course to develop under the educational activities of this project. Enhancing both the feasibility of the educational plan, and the quality of learning that can occur in these courses, both will be included in DePaul's liberal studies curriculum as "experiential learning" – a designation that reduces their enrollment cap to 20, from the usual limit of 40 students. For the purposes of the experiential activities related to this project, I expect to have students organize themselves into 4 smaller working groups. I expect the courses to enroll an interdisciplinary group of students. Target groups outside geography include: public policy, sociology and anthropology students in each program's respective urban studies concentrations, undergraduates from DePaul's computer science school, and participants in DePaul's GIS Certificate Program. In Fall 2002, the Geography and International Studies Departments will launch an additional certificate program in which students will learn conceptual and technical skills in spatial analysis technologies, through applications that can be broadly understood as analyzing or promoting social justice. I expect the Spatial Justice Certificate Program to play a strong role in developing student interest in Geo245 and preparing students to perform well in the course.

Implications of the Proposed Study's Integrated Research and Education Activities

The interconnection of the research and education components of this project is significant in several ways. By integrating sustained investigation of the urban political and spatial impacts of GIS-based knowledge construction and application with development of active pedagogy in GIS and urban geography, the project furthers my career development goals of making strong and creative contributions in urban geography, critical GIS, and geographic education. The 5-year duration of the project is essential to the interconnected goals of the project, ensuring development of an effective and sustainable service learning model for GIS collaboration, as well as development of more detailed and robust theorizations of the urban political and spatial impacts of GIS-based knowledge. The latter is particularly significant, given the short-term nature of many previous research efforts through which current knowledge about societal impacts of GIS have been developed. Interconnection of the research and education components shifts the role of participating students from one of passive knowledge consumption in their educational activities to one of active knowledge production – a shift that will enhance their learning, critical thinking skills, and conceptualization of their own responsibility and efficacy as citizens. Finally, the linking activities and interactive circulation of information and ideas through the research and educational portions of the project and among the diverse range of participants will enable rich, multi-faceted data development and analysis informing to project's key research questions. In this manner, the integrated project will foster significant conceptual advancement in urban geography and GIS to better understand changing relationships between citizens and the state, changing practices of urban governance, and multi-faceted implications of these developments for the production and reproduction of urban space.

References

Aitken, S. and Michel, S. 1995. Who Contrives The 'Real' In GIS? Geographic Information, Planning, And Critical Theory. *Cartography And Geographic Information Systems* 22:17-29.

Atkinson, R. 1999. Discourses Of Partnership And Empowerment In Contemporary British Urban Regeneration. *Urban Studies* 36(1): 59-72.

Barndt, M. 1998. Public Participation GIS: Barriers To Implementation. *Cartography And Geographic Information Systems* 25(2): 105-112.

Bennett, L. 1997. *Neighborhood Politics: Chicago And Sheffield*. New York: Garland Press.

Boyte, H. 1989. *CommonWealth: A Return To Citizen Politics*. New York: Free Press.

Brenner, N. and Theodore, N. 2001. Cities And The Geographies Of 'Actually Existing Neoliberalism'. Paper presented at 'Neoliberalism and the City'. Chicago, September 2001.

Burawoy, M. 1991. The Extended Case Method. In M. Burawoy, Ed., *Ethnography Unbound: Power And Resistance In The Modern Metropolis*, pp. 271-287. Berkeley, CA: University of California Press.

Carver, S. 2001. Participation And Geographical Information: A Position Paper. *Workshop on Access to Geographic Information and Participatory Approaches Using Geographic Information*. Spoleto, Italy, December 2001, http://www.shef.ac.uk/~scgisa/spoleto/workshop.htm

Cone, D. and Harris, S. 1996. Service-Learning Practice: Developing A Theoretical Framework. *Michigan Journal of Community Service Learning* 3: 31-43.

Craig, W. and Elwood, S. 1998. How And Why Community Groups Use Maps And Geographic Information. *Cartography and Geographic Information Systems* 25(2): 95-104.

Craig, W., Harris, T., Weiner, D. 2002. *Community Participation And Geographic Information Systems.* London: Taylor and Francis.

Densmore, K. 2000. Service Learning And Multicultural Education: Suspect Or Transformative? In C. O'Grady, Ed., *Integrating Service Learning And Multicultural Education In Colleges And Universities*, pp. 45-58. Mahwah, NJ: Lawrence Erlbaum and Associates.

Dorsey, B. 2001. Linking Theories Of Service-Learning And Undergraduate Geography Education. *Journal of Geography* 100(3): 124-132.

Elmes, G. 2001. Responses To Papers On Access And Public Participation Using Geographic Information. *Workshop on Access to Geographic Information and Participatory Approaches Using Geographic Information*, Spoleto, Italy, December 2001, http://www.shef.ac.uk/~scgisa/spoleto/workshop.htm

Elwood, S. 2002a. GIS And Collaborative Urban Governance: Understanding Their Implications For Community Action and Power. *Urban Geography* 22(8): 737-759.

Elwood, S. 2002b. GIS Use In Community Planning: A Multi-Dimensional Analysis of Empowerment. *Environment and Planning A* 34(5): 905-922.

Elwood, S. 2002c. Whose Neighborhood Is It? Revitalization Programs, Community Organizations, and the Local State. Rights to the City Conference. Rome, May 2002.

Elwood, S. 2002d. Histories And Practices Of Activism In Minneapolis And Chicago: Implications For University-Community Collaboration. Annual Meeting of the Association of American Geographers. Los Angeles, CA, March 2002.

Elwood, S. 2000. Lesbian Living Space: Multiple Meanings Of Home. *The Journal of Lesbian Studies* 4(1): 11-27.

Elwood S. 1998. Community-Based Environmental Research: Exploring Issues of Equity and Democracy. Annual Meeting of the Association of American Geographers. Boston, MA, March 1998.

Elwood, S. 1996. Community-Based GIS Education: A Twin Cities Experiment. Second International Symposium on GIS in Higher Education. Columbia, MD, September 1996.

Elwood, S. and Leitner, H. Forthcoming 2003. Community-Based Planning and GIS: Aligning Neighborhood Organizations with State Priorities? *Journal of Urban Affairs.*

Elwood, S. and Leitner, H. 1998. GIS and Community-Based Planning: Exploring the Diversity of Neighborhood Perspectives and Needs. *Cartography and Geographic Information Systems* 25(2): 77-88.

Elwood, S. and Martin, D. 2000. 'Placing' Interviews: Location as a Consideration in Doing Qualitative Interviews. *The Professional Geographer* 52(3): 649-657.

Ferman, B. 1996. *Challenging The Growth Machine: Neighborhood Politics In Pittsburgh And Chicago.* Lawrence, KS: University of Kansas Press.

Fisher, R. 1994. *Let The People Decide: Neighborhood Organizing In America*, 2nd ed. New York: Maxwell Macmillan.

Flint, C. 2002. Introduction: For A Pervasive Political Geography In The Curriculum. *Journal of Geography* 101(2): 61-62.

Ghose, R., and Huxhold, W. 2001. The Role Of Local Contextual Factors In Building Public Participation GIS: The Milwaukee Experience. *Cartography and Geographic Information Systems*, 28(3), 195-208

Gough, J. 2001. Neoliberalism And Socialization In The Contemporary City: Opposites, Complements And Instabilities. Paper presented at 'Neoliberalism and the City', Chicago IL, September 2001.

Grieder, W. 1992. *Who Will Tell The People: The Betrayal Of American Democracy*. New York: Touchstone.

Handler, J. 1996. *Down From Bureaucracy: The Ambiguity of Privatization And Empowerment*. Princeton, NJ: Princeton University Press.

Harris, T., Weiner, D., Warner, T., and Levin, R. 1995. Pursuing Social Goals Through Participatory GIS: Redressing South Africa's Historical Political Ecology. In J. Pickles, editor, *Ground Truth: The Social Implications of Geographic Information Systems*. New York: Guilford, 196-221.

Hasson, S. and Ley, D. 1994. *Neighbourhood Organizations And The Welfare State*. Toronto: University of Toronto Press.

Healy, P. 1997. *Collaborative Planning: Shaping Places in Fragmented Societies.* Vancouver: University of British Columbia Press.

Jacobs, B. 1992. *Fractured Cities: Capitalism, Community, And Empowerment In Britain And America*. New York: Routledge.

Jessop, B. 2001. Good Governance And The Urban Question: On Managing The Contradictions Of Neoliberalism. Paper presented at 'Neoliberalism and the City', Chicago IL, September 2001.

Kahne, J., Westheimer, J., Rogers, B. (2000). Service Learning And Citizenship: Directions For Research. *Michigan Journal of Community Service Learning* 7: 42-51.

Kearns, A. and Paddison, R., 2000, New Challenges For Urban Governance: Introduction To The Review Issue. *Urban Studies* 37(5/6): 845-850.

Kemp, K. 1997. The NCGIA Core Curricula in GIS and Remote Sensing. *Transactions in GIS* 2(2):181-190.

Kemp, K. and Wright, R. 1997. UCGIS Identifies GIScience Education Priorities. *GeoInfo Systems* 7(9): 16-20.

Kolb, D. 1984. *Experiential Learning: Experience As A Source Of Learning And Development.* Inglewood Cliffs, CA: Prentice-Hall.

Lake, R., 1993, Planning And Applied Geography: Positivism, Ethics, And Geographic Information Systems. *Progress in Human Geography* 17(3): 404-413.

Lake, R. and Newman, K. 2002. Differential Citizenship In The Shadow State. Paper presented at Rights to the City Conference. Rome, Italy, May 2002.

Leitner, H., Elwood, S., Sheppard, E., McMaster, S., McMaster, R. 2000. Modes of GIS Provision and Their Appropriateness for Neighborhood Organizations: Examples from Minneapolis and St. Paul, Minnesota. *The URISA Journal* 12(4): 43-56.

Maloney, W., Jordan, G., and McLaughlin, A. 1994. Interest Groups And Public Policy: The Insider/Outsider Model Revisited. *Journal of Public Policy* 14: 17-38.

Mayfield, L., Hellwig, M., and Banks, B. 1999. The Chicago Response To Urban Problems: Building University-Community Collaborations. *American Behavioral Scientist* 42(5): 863-875.

McCann, E. 2001. Collaborative Visioning Or Urban Planning As Therapy? The Politics Of Public-Private Policy Making. *The Professional Geographer* 53(2)*:* 207-218.

Meister, R. 1998. DePaul University: Catholic, Vincentian and Urban. In Rury, J. and Suchar, C., Eds, *DePaul Unversity: Centennial Essays and Images*, pp. 5-50. Dubuque, IA: Kendall/Hunt Publishing Co.

Merrett, C. 2000. Teaching Social Justice: Reviving Geography's Neglected Tradition. *Journal of Geography* 99(5): 207-218.

North, P. 2001. Community Action And Partnerships For Urban Regeneration: New Sites Of Struggle? Paper presented at Annual Meeting of the Association of American Geographers. New York, February 2001.

Peck, J., and Tickell, A. 1994. Too many partnerships…the future for regeneration partnerships. *Local Economy* 9: 251-265.

Peck, J. and Tickell, A. 2001. Neoliberalizing Space: The Free Economy And The Penal State. Paper presented at 'Neoliberalism and the City'. Chicago, September 2001.

Pickles, J. 1995. Representations In An Electronic Age: Geography, GIS, And Democracy. In *Ground Truth: The Social Implications of Geographic Information Systems*, ed. J. Pickles, pp. 1-30. New York: Guilford.

Putnam, R. 1995. Bowling Alone: America's Declining Social Capital. *Journal of Democracy* 6: 65-78.

Sandercock, L. 1998. *Towards Cosmopolis: Planning For Multicultural Cities*. New York: John Wiley.

Sheppard, E. 1993. Automated Geography: What Kind Of Geography For What Kind Of Society? *The Professional Geographer* 45(4): 457-460.

Taylor, M. 2000. Communities In The Lead: Power, Organisational Capacity And Social Capital. *Urban Studies* 37(5/6): 1019-1036.

Varlotta, L. 1996. Service-Learning: A Catalyst for Constructing Democratic Progressive Communities. *Michigan Journal of Community Service Learning* 3: 22-30.

Warf, B. 1999. Constructing A Dialogue: Geographic Education And Geographic Research. *The Professional Geographer* 51(4): 586-591.

Warren, S. 1995. Teaching GIS As A Socially-Constructed Technology. *Cartography and Geographic Information Systems* 22(1): 70-77.

Yapa, L. 1991. Is GIS Appropriate Technology? *International Journal of Geographical Information Systems* 5(1): 41-58.

Yin, R. 1994. *Case Study Research, Design and Methods*, *2nd ed.* Newbury Park, CA: Sage Publications.