Public Participation GIS in the UK and the USA: towards a cross cultural analysis

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Abstract

This paper explores how different institutional structures and practices associated with urban planning in the UK and the US influence public appraisals of Public Participation GIS. Drawing on two UK case studies and several reported US cases, we demonstrate how cross-cultural studies can provide important insights into the social embededness of PPGIS. In particular such comparisons emphasise how the usefulness of PPGIS as an information source and its role in community empowerment are constructed by and reproduce wider social relations. We conclude that the PPGIS research agenda should adopt a more adaptive and contextual approach that recognises the significance of institutional structures and norms at both national and local scales.

Introduction

The concept of community-integrated GIS or neighbourhood GIS is part of a wider discussion on the development of Public Participation GIS (PPGIS) and the social implication of GIS (Schroder, 1997; Talen, 1999; Harris & Weiner, 1998; Pickles, 1995; Craig *et al.*, 2002). Within PPGIS research, Talen (1999) identifies three streams of enquiry: improved access to GIS, use of GIS as collaborative spatial decision support systems (CSDSS) and exploration of the ways in which local knowledge and narratives can be captured and integrated within GIS. In all these enquiries researchers have worked with community groups, and the emerging literature provides insights about technological innovations (Kingston *et al.,* 2000; Jankowski & Nyerges, 2001; Horita, 2000; Shiffer, 1995a), procedural and application innovations (Talen, 2000a; Craig & Elwood, 1998), surveys of practice (Sieber, 2000, Sawicki & Craig, 1996) and theoretical evaluations and debates (Sheppard, 1995; Pickles, 1995; Talen, 1999). Although examples for projects among rural communities and in developing countries exist (Craig *et al.* 2002, see also Kingston *et al*, 2000; Harris *et al*, 1995), there is a clear emphasis in the literature on urban settings in the US, where the researchers engaged with the local community using an action

research or capacity building approach (Ghose, 2001; Al-Kodmany, 2000; Elwood, 2002). An implicit, underlying assumption in all these studies is that lessons and settings of PPGIS are transferable, and that "what works" will be useful beyond the limits of the single project. However, since PPGIS researchers also seek to explore the societal implications of GIS use, it can be expected that cultural and institutional settings will have an influence on project outcomes.

In this paper, we explore how the different institutional structures and practices in the US and UK influence community-level GIS activities, especially their influence on perceptions and practices of potential and existing PPGIS users. We draw on two PPGIS workshop conducted in London, and compare them with the findings of similar studies reported from the US (Among them Ghose, 2001; Ghose & Huxhold, 2001 and in press; Al-Kodmany ,1998, 2000; Elwood & Leitner, 1998 and Elwood 2002). Although each study differs in detail, all studies were conducted within urban contexts at the neighbourhood scale and deal with similar planning issues. They also use similar computing facilities and research methodologies. Our main aim is to explore how differing institutional contexts associated with urban planning in the US and UK are constitutive of public appraisals of the usefulness of PPGIS as a planning tool. Material to our approach is the use of a qualitative research methodology that focuses on the arguments and values people use to express their experience of PPGIS and its potential (see Harrison and Haklay, forthcoming). Using the analysis of language as social practice, we seek to examine the social embededness of PPGIS as systems that are constructed by, and constitutive of, wider social relations. Based on the findings of our work we call for more cross-cultural studies as part of the PPGIS research agenda.

The paper is structured in four parts. First we provide a brief overview of American and British planning systems, focusing on those aspects that influence the utilisation of GIS. Second we describe the English and American case studies used as the basis of our cross-national comparison. The core of the paper, in part three, is a comparison between public appraisals of PPGIS and the institutional structures and norms underpinning them. Finally, the implications of our cross-cultural analysis for future PPGIS research are discussed.

British and American Planning Systems.

Although based in free-market democracies the British and American planning systems differ profoundly in terms of their foundational principles, institutional structures and norms. These

differences have a far-reaching influence on the practice and concepts of PPGIS. Here we provide a short sketch of the two planning systems but cannot provide the comprehensive analysis offered by Cullingworth (1993,1997) of the American system, and Rydin (1998) and Cullingworth and Nadin (2002) of the British one. Several key differences are worth highlighting.

The philosophy underpinning the two planning systems is succinctly expressed by Cullingworth when he states that: "British planning is conceived in terms of policies which will advance the public interest. This is in striking contrast with the United States, where the concern is frequently with resolving conflicts between private interests in land" (1993, 209). This conceptualisation explains the centralised nature of the planning system in the UK in which central and local government play prominent roles. By contrast planning in the US is inherently decentralised and based on the complex interplay among Federal, State, Local government and other actors. In practice, Cullingworth (1997) regards the British system as the complete opposite of the American system. Since the 1947 Town and Country Planning Act, land-use planning has been a compulsory duty of all local authorities in the UK, and central government issues national planning guidance through a series of parliamentary circulars. So, although planning decisions are implemented at the local level in both countries, there is a strong expectation in the UK that the local 'state' works in the public interest to moderate the excesses of property developers.

In contrast and at its most extreme, such as in "exurban" Houston, the decentralised American system means that planning decisions are determined by the activities of developers (The Economist, 2001), although an orderly planning system in the form of zoning ordinances is the common norm. Nevertheless, the planning system is predicated on the constitutional rights of the property owner to profit from development (Cullingworth, 1993) and as a result, urban development, redevelopment and control of land use change are all highly sensitive political issues. Thus, strong political alliances between city authorities and developers are favoured and local communities run the risk of being marginalized in the decision process unless they take a pro-active approach to involvement in the planning process.

These differing roles of the local state in the planning system suggest that in appraising the potential of GIS in the planning process, the public in the UK and the US will have differing expectations of the local state as a GIS 'service provider'. But in addition, the power imbalance constituted through the decentralised US planning system means that the relationship between neighbourhood/community organisations and public authorities is an adversarial one, in which

local organizations are positioned as the 'watchdog of public interest' (Bartholomew, 1999). Hence, if communities are to engage effectively with the local political system they need a means of "levelling the playing field" (Elwood & Leitner, 1998). Under these circumstances GIS is championed as means of empowering local and marginalized groups because it offers the prospect of providing information that can be used to challenge planning proposals. In the UK there is an expectation at least in principle that local authorities will act in the public interest when balancing the costs and benefits of development and the requirement that GIS is a means of 'levelling the playing field' may seem less pressing. However, the extent to which local government is in tune with local people's concerns and can legitimately claim to represent the public interest is a growing concern in the UK (DETR 1998a and b). The role of GIS as tool of community empowerment in the UK is hence likely to depend critically on people's experience of their own local institutions and the extent to which they are trusted to act 'in the public interest'.

Linked to notions of empowerment are practices of public participation. In the UK participation in the planning process is based on a legal framework put in place in the 1970s and reinforced by the Planning and Compensation Act 1992 which saw a shift to plan-led development (Cullingworth & Nadin, 2002; Davis, 2001). Through a structured process, based primarily on written objections, public consultation occurs at the final stages of the planning process and when compared with the power of strong American communities, is rather limited and formal (Cullingworth 1993). In other words there is opaqueness to the participation process that limits the social spectrum and extent of participation. (Thomas 1998, Davis 2001).

In the American case, participation depends on the specifics of location and local political structure. However, the wide use of the courts (Cullingworth 1993, 1998) opens up potentially powerful avenues for public involvement, albeit in an adversarial manner. At the same time where there is a strong community base and in cases where community planning occurs, the involvement of the community can be far-reaching – sometimes from the very early stages of the re-development process (Howard, 1998). Although examples of participative approaches to local planning occur in the UK (as in Twedwr-Jones & Thomas, 1998) they are not mandatory and procedural participation is still viewed as the main mechanism for public participation. Therefore, while in both countries the activities of PPGIS researchers are strongly linked to the concept of "planning in the face of power" (Forester, 1989) and are consistent with approaches to 'collaborative planning' (Innes, 1999, Healey, 1997), the power structures and norms of public

participation in the two countries differ. In turn, the extent to which PPGIS can assist local community groups shift the balance of power in the planning process will be affected by the norms and practices associated with existing participation structures and practices.

This brief account of the essential characteristics of the planning systems in the US and the UK provides the institutional context in which our comparative analysis of the use and potential of PPGIS as a planning tool is pursued. Before turning to our cross-cultural analysis we briefly describe our London case studies and similar studies reported from the US. A full description of the London cases and their methodologies can be found in Boott *et al* (2001) and Harrison and Haklay (forthcoming)

The London and US case studies

In the London workshops undertaken in the inner London borough of Wandsworth (Figure 1), we used the lens of environmental planning as the gateway to the use of the GIS as a planning tool, and the issue of brownfield development and the actions of local amenity groups and individual residents as the focus for discussion on PPGIS. The case study involved a proposed high-density development of luxury homes on the Thames that was of concern to local residents. These concerns related to the lack of provision for affordable homes and the wider environmental impacts the development would incur - for example, traffic generation and congestion, and pressure on local services such as schools, playground and library provision.
It is helpful to put our case study in the context of other urban PPGIS studies in the UK. The London Borough of Wandsworth is considered one of the most forward looking in term of public participation and innovative use of Information and Communication Technologies (Carver, 2001). It was one of the first local authorities to provide full access over the Internet to all the documents which are used in its physical planning (including letters of objection and minutes of planning committee). The local authority also promotes public involvement in service delivery, including in its planning department, through the involvement of advisory committees, community panels and attitude surveys.
Wandsworth is an inner borough of London and its socio-economic composition is rather mixed. It is not the poorest borough nor the richest. In recent years the riverside locations along the Thames have proved attractive to residential development and therefore this area is at the centre of redevelopment activity, and many derelict or defunct industrial areas are in the process of redevelopment, usually as luxury housing with "river views". In our case, we focused on few of these sites and their neighbouring area.

Figure 1 - London's Boroughs map

As for recruitment of participants, we invited two distinctive local groups of residents to the workshops. We recruited fourteen people for the first workshop all of who were active members of a community or voluntary group in the borough of Wandsworth. For the second workshop we recruited nine participants who had objected to a planning application in the borough during the last twelve months. Participants varied in computer literacy from the novice to the experienced. All respondents were white and predominantly middle class. In this regard participants were typical of those 'active publics' other studies of public participation in planning have recorded (Thomas 1997; Rydin 1998).

Both workshops were structured in three parts: an introductory plenary session, a practical 'hands-on' session and a focus group discussion. The introductory session outlined the basic features of the GIS and data bases were displayed. In the second session participants worked around a free-standing PC in groups of two or three with a GIS facilitator or 'chauffeur'- a person familiar with GIS and the content of the specific system (Following Nunamaker *et al.* 1991; Shiffer, 1995a, 1995b, Jankowski & Nyerges, 2001). The facilitators demonstrated some of the basic tasks and then encouraged participants to take control of the mouse and keyboard and to navigate their own way through basic operations of the system. The 'hands on' session

continued for 90 minutes, followed by a break and an hour-long focus group discussion moderated by an experienced member of the research team. All the discussions during the workshop were recorded and transcripts prepared. We used an off-the-shelf GIS package (ESRI's Arcview) in both workshops, and in addition we used the capabilities of modern desktop GIS to provide multimedia access to specially designed web-pages or existing web-sites.

In order to compare our findings to American practice, we have use reported case studies which share simialr aims, methods and conduct. Among these cases are Rina Ghose's projects in Milwaukee (2001; Ghose & Huxhold, in press, 2001), Khair Al-Kodmany work in Chicago's inner-city neighbourhoods (1998, 2000) and others cases such as those collected by Craig *et al.* (2002). These US studies are similar to our London study in several respects. First, the studies were undertaken in an *urban context*: they were carried out in densely populated urban centres, located in highly developed, post-industrial countries. Another common element is that all projects were conducted in *English* as the main language. Second, they share a similar *Scale*: in all cases, the neighbourhood (limited urban area, extending over 2-4 Km) was used as the main spatial unit of study and the scale of the GIS. Third, they share similar *issues*: the GISs were used to monitor and discuss planning activities, usually to assist strategic planning and neighbourhood regeneration projects. Fourth, all the projects where conducted by *academic teams* and *similar GIS packages* -. "desktop-GIS" mounted on PC-class computers, and some multimedia and digital imagery was integrated with the GIS database[1]. Finally, in all the cases, the research team approached people who are active in the civic life of their community. All the cases provided opportunities for community members to gain practical experience with GIS, either through training sessions in university facilities (Ghose 2000, Al –Kodmany 1998, 2000 and ours) or as a participant observer (Elwood 2002).

Public appraisals of PPGIS - British and American experiences compared

In this section, we offer a comparative analysis of the findings of the American and London cases based on the reported experiences of PPGIS users. We focus on two themes that relate to the distinctive institutional relationships in which the studies are grounded namely: ownership of a PPGIS and the role of the local state, and PPGIS technologies as tools of empowerment..

Ownership of a GIS: the local state and the community

There is a strong emphasis in the US studies on the operation of the GIS by community organisations themselves. For example, Elwood and Leitner (1998) describe four case studies where support and data sets were provided to local organizations so they can operate and maintain the system. Ghose (2001) describes similar experience with neighbourhood organisations. As Leitner *et al.* (2002) note, this is a major stream in PPGIS activities in which researchers explore the availability, implementation and the impact of PPGIS on organisational practices. During our London workshops the question of ownership of the systems was discussed, but respondents were unclear about where ownership should reside. On the one hand, several community activists were against the idea of local authority ownership and suggested local groups as appropriate owners:

> Paul: "a lot of local groups are very suspicious of the borough, they don't trust local authorities to put everything on their information sheets and anyway lots of local groups know things that local authorities doesn't know …."

However, this view was not unanimous and other participants felt that it is possible to trust the local authority as a custodian of public databases:

> James "… you mentioned how this information might be distributed and made available to the public… I would be perfectly happy if this information was available to the council and then to the public because one of the strengths of Wandsworth is that they are very good in being helpful to the public".
>
> Tim "Excellent, yes I agree with you".

But other residents in the second workshop were less sure about the extent to which a local authority run GIS would incorporate the kinds of information residents felt to be important. Even small changes would make a difference, for as Tom says: "It would be very nice also if when the future planning applications came in that they were obliged [to display a] kind of pictorial view of the proposed building. …." But Alice quickly retorts: "I don't think the Council would agree to that though, would they?" This brief exchange demonstrates a wider feeling expressed by participants that the opaqueness of the planning process is often used as part of the bureaucratic arsenal to prevent effective public participation particularly in the planning process. For example in the second workshop Edna, an elderly resident, emphasised the need for a more trusting relationship between the Local Planning Authority and local people:

> "One of the problems of planning applications – especially if you've got a fairly large important site…is that the planning application is often at the end of the process rather than the beginning of the process. And planning applications are often the outcome of negotiations and 'gives and takes' between the Planning Department and the 'would-be' developer. And two things, one is that the decision-making process has gone too far by the time the planning application is in the public domain. So what one needs is to have a better early warning system which really means highlighting sites which are under discussion, which are ripe for development – brownfield sites, and really putting some information in the public domain before you actually have a planning application. And (two) there is the question of legalities. As far as I know, a Council as a Planning Authority are not required to put anything in the public domain until there is actually a planning application put in. But that is too far down the line for important sites."

In these terms a publicly available GIS would need to challenge existing norms and institutional practices before local people would regard it as providing an effective planning tool.

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In discussing the potential role of the local authority as the owner of the GIS, questions of legitimacy were also invoked. For example, there was support for Tessa's view that the local authority should be both the 'provider' and 'guardian' of information:

> Tessa: "I think the Council should be the start, because as a part of our democracy, it is a focus and it has a credibility. I don't have a problem with the private sector being involved [but] I think that makes the Council doubly important because that they should be some sort of filter, if they can be, by not linking us to something that is substandard in terms of the information that's provided."

These ambivalent views about the role of the local authority suggest that in this London case, the role of GIS as a potential planning tool is closely embedded in peoples expectations and experiences of their own local authority. So, while there is a general expectation that the local state works in the public interest, questions of whether the local authority can claim to legitimately represent local people's views depends on the extent to which the public trust their own local authority.

To these concerns about the role of the local authority were added more practical concerns that reflected wider economic and social constraints. For example, in discussing issues of ownership of a GIS, Wandsworth residents were acutely aware of the costs such a system would incur and

while these were discussed in financial terms, people were also concerned about the social 'costs' of provision and access. Similar concerns about social exclusion and GIS have been raised in American case studies (Ghose, 2001; Al-Kodmany 1998, 2000), where the availability of digital spatial information at a neighbourhood scale varies considerably across the country and is a major obstacle to the construction of community-based GISs. Furthermore, the decentralised structure in the US adds to the obstacles that local activity groups must overcome when assembling a GIS. For example, Ghose (2001) argues "Non-profit organizations and data suppliers are usually eager to assist such grassroots organizations, but their names and willingness to help remain largely unknown to neighborhood residents" (p. 144) while Elwood and Leitner (1998) note lack of public awareness of available data sources.

The economic costs of data provision were also discussed. In the UK, where digital data are widely available from centralised providers but extremely expensive to purchase, the experience of community activists led them to explore the implications of high costs were a GIS to be community based:

> John: "if you want to buy the latest maps available, I know that [the public library] get them within 3 weeks from the date they are going in, live as it were, very expensive, how did you manage [to create a comprehensive database]? What is the situation with this system giving information out to the public? Because the copyright … they must be very uptight about what you're doing".

Within the UK, the Ordnance Survey maps are commonly used by the public, and in effect, are 'taken for granted'. But although community activists expect to have access to high quality maps on demand, and in one case activists had received an output from the local authority's GIS, in practice most local authorities charge the public for maps and other documents (CPRE 2000). So, while in the US the costs of hardware and software dropped dramatically since the mid-1990s, to the level at which Sawicki and Craig (1996) argue data has been democratised, this is not the case in the UK. In both London workshops participants discussed the implications of these high costs for system provision and maintenance:

> Amanda: "but presumably you can download things off the web, which I must say I hear these things but I get somebody else to do it (laughs at the background). Presumably you can access information more readily now and it will become better. … After that the cost factor come into it. Because you think: who is paying for all this?"

In the US, where most Internet access is based on a monthly fee with no on-going costs, the time issue is not as acute as in the UK[2]. But it is equally clear that national telecommunication infrastructure and pricing is an important differentiator of how the public are likely to respond to PPGIS. And, although authors such as Leitner *et al* (2002) and Kingston *et al* (2000) promote Internet-based GIS as a means of providing access to a wider audience, the UK the publics we worked with are well aware that the real costs of these systems are likely to lead to the marginalization of some social groups. In both workshops participants shared James' concern about the wider social implications of GIS:

> James: "there are lots of people in Wandsworth who don't have the access to the expertise to do this. They can go along to the library but they might not feel comfortable in the library … We're excluding large sectors of the population in certain areas".

These concerns about the social and economic costs of provision mean that in the London case an expressed preference for the concept of an "enlightened local authority" or third party as the owner of the GIS seems justifiable. But if the high costs of acquiring digital data and the perceived complexity of operating and developing a community-based GIS were the only factors implicated in this justification, we would expect similar views to be encountered in the US studies. The fact these concerns were not reported in the US studies suggests that 'cultural givens' - the formal structure of the planning system, procedures and practice of participation in planning and the location of power in the decision-making process may also be implicated. In particular, the expectation that the local authority in the UK works in the public interest but cannot always be trusted to do so, leads to the conclusion that a third party (and not the local community or the local authority) should own and manage the GIS.

In the American settings, the proposition that the local state should own and manage the system seems inappropriate given the strongly devolved planning system. Instead, the main focus of US researchers as well as federal agencies is on delivering information technologies at the community level so that local communities can increase their purchase on the planning process. Such as view is consistent with the (perceived) importance of communities in their role as 'the watch-dog of public interest' in the planning process (Talen , 2000b). The other motivation for community-managed GIS is the importance of the community group as a locus of political activities in the US. For as Craig and Elwood (1998) note, there is a powerful philosophical basis for such community activism: " … Americans generally believe that power comes from individuals and that organizations of individuals add to that strength" (p. 96)

PPGIS as technologies of empowerment.

The implicit assumption of much PPGIS practice is that access to information is a route to empowering local communities. However, the extent to which information itself is power was strongly contested by respondents in the two London workshops. During our first workshop, one of the participants argues:

> Martin: "[the GIS] has potential. It's simply information, it gives a little bit about policy but not much, the development and planning process is fantastically complicated, information is just the beginning of each subject. There are frankly simpler ways of getting this information such … I urge you to carry on with this but I don't want it to be under any misapprehension - this is simply information. Now information is power and all of that but there are things like the political process, the property market, property development, traffic and all of that. … Now it's all very interesting to know that it's a site of nature conservation and this, that and the other, but in the real world virtually every site in that situation given the property market and the political process - nature conservation policy is going to be overridden by more important factors".

As this exposition demonstrates, information has to be weighed against other elements that influence the decision outcomes and, at least in this case, where the development pressure is especially high, information is not perceived as the most important element. Other residents were concerned not only about the kind of information a GIS would provide but also whether it would be made available sufficiently early on in the development process for local communities to form a judgement about it, and, perhaps to have an impact on the proposal itself. In this way residents challenged both the value of GIS information and the extent to which it would lead to structural changes in the decision-making development process itself. Showing a healthy scepticism of the ability of PPGIS to alter power relations these London residents appear to be more critical of these systems than experiences reported from American cases.

In the American cases, one of the main motivations for PPGIS projects is the empowerment of community through access to information (Ghose 2001). Such empowerment is based on effective use of the information ways that helps the local community in achieving their goals. In the American cases, such suspicion toward information was not recorded. One possible explanation for this is the community-led settings of the American PPGIS efforts, as Elwood

and Leitner (1998) record: "Neighborhood groups don't have time to just gather information … They need to see outcomes". The expectation that community groups act as an independent actors in the planning process by setting their own goals, collecting evidence and advocating specific actions suggests that only relevant information is collected and used from the outset. Under these circumstances it seems less likely that questions about the value of information will rise.

However, while participants in those US studies we have consulted do not seem to question the ability of information to alter the balance of power in the planning system, there is strong agreement about data requirements. In particular all the studies we reviewed encountered a strong desire for users to "get behind the screen" so that they can add their own information to the system. Interest in integrating local knowledges and views with official data is also reported in other studies (Kingston *et al*, 2000; Ghose 2001; Talen 2000a; Harris *et al*. 1995 among others). When the idea of integrating local knowledge within the GIS (Bottom Up GIS in Talen [2000a] terms) was raised in our London studies, participants argued that:

> Brian: "This does raise an important point for local groups. Who is in control of this information and I'm sure local groups would want to be able to put their own information on this … We would want to know how to do that, which is getting behind the screen in a sense."

Building on GIS as a potentially more inclusive source of information, others in the workshops wanted the system to provide two-way communication between the local authority and its community groups and citizens. Some participants wanted to see the system as a tool for empowering and mobilising the community:

> Elaine: "… I think the whole thing should become much more community based. That the actual people in that Community are somehow even helped to really start becoming aware of how much power they've got."

This desire for a more interactive, communicative GIS is consistent with more participatory approaches to the planning and decision-making processes that have been advocated in both the US and the UK by planning researchers and practitioners (Forester, 1989; Innes 1999, and Healey 1997). There is also a strong sense in all the case studies that local people need access to the same information that decision-makers use (Ghose and Huxhold, in press; Ghose 2001). In our London cases we recorded strong interest in gaining access to reliable information:

> "…I'd have loved something on population and densities, because of these highly expensive sites being developed for housing with high density. You do feel the facilities of the area are getting totally under threat, putting the pressure on, so information about population, … and also about traffic rates and roads… I think the Shell Planning Application was [accompanied] by vast quantities of data about traffic flows, none of which I believe seriously …"

Using authoritative data in ways that are sensitive to local residents' perspectives is seen as an empowering activity, not least because it provides an opportunity to develop credible arguments with which to confront and engage the decision making process. As Elwood and Leitner (1998) note, community activists perceived that "maps and quantitative data have greater legitimacy and influence in negotiation with more powerful social actors" (p. 84)

We can therefore suggest that although the preferred ownership structure for GIS differs between the two cultures, they share a number of common objectives in terms of the kind of information thought desirable by local residents. There is a strong desire to see local GIS incorporating locally generated information and a desire to achieve the 'level playing field' associated with ensuring access to the same information as planning professionals and decision-makers. However, while PPGIS users in all studies share a desire to add locally generated information to the GIS and have access to 'official' data bases, there is a significant difference between the American and British cases in terms of the perceived value of 'information as power'. The opinion voiced by most of the participants in the London cases that information is not always the most important element in the decision making process is a telling one. In a sense, this view goes to the heart of the role of PPGIS within the UK planning system. In the UK, the centralised nature of the planning system and its structures and procedures position planning as a rational, professional activity that privileges technical and procedural knowledge, and discourages local groups from creating their own databases and local systems. Under these circumstances communities are only involved *indirectly* in planning decisions since the local authority is expected to work in the public interest[3]. When local authorities are not trusted to work in the public interest then a publicly available GIS will need to challenge existing institutional norms and practices if it is to serve as an effective tool for engaging more people in the planning process.

By contrast, the notion of 'self help' is a strong one in the US and places the onus on local communities to generate and manage a local GIS if they wish to take part in the decisions that influence their lives. But focusing PPGIS provision at the community level also has its own

problems. In the American cases the supply of information varies according to local circumstances with different types of data sets held by numerous different bodies. Gathering and organising these data into community level GIS requires substantial effort and a continuous commitment that cannot always be sustained (Ghose and Huxhold, 2001). In addition as Leitner *et al.* (2002) suggest "[T]he communication structure for Internet Map Servers represents, theoretically, one of the most egalitarian of the methods for distributing spatial information to neighborhoods-a method of ubiquitous (both in terms of space and time) access. With relatively low-level equipment, neighborhoods' access to this rich source of information will be filtered by those who design the site." (p. 12). While access to the Internet is seen as universal in the US, as yet it is perceived as being costly and socially exclusive in the UK. As a result, London residents wanted to see the service delivered over the Internet as well as through provision in public facilities, such as libraries and schools where help might be at hand. In both the US and the UK therefore, questions remain about the extent to which 'locally available' GIS will be sufficiently well informed to provide the kind of information local residents require.

In summary, this brief cross-cultural analysis suggests that institutional structures and practices associated with national land-use planning systems have subtle but potent influences on public appraisals of where the ownership and management of GIS should reside. Likewise, this approach confirms that the concepts and practices of PPGIS are embedded in wider social relations that will compromise the likely fulfilment of the 'anywhere, anytime, access to all' promise of empowerment that these new technologies appear to offer. Moreover, if the future provision and servicing of GIS becomes more localised, much as Goodchild (2000) envisages, we can anticipate that 'local' as well as national institutional norms and practices will come to exert a strong influence on public attitudes to the potential of PPGIS as a planning tool.

Conclusions

In this paper we have begun to explore why cross-cultural studies are required if PPGIS research is to contribute to the wider agenda and a focus on the societal implications of GIS (see also Sieber, in press). While PPGIS activities have emerged as a means of democratising GIS and opening GIS up to wider audiences, future research needs to embrace the social embededness of PPGIS itself and an examination of the ways in which this embededness underpins public appraisals and use of these systems.

Our cross-cultural comparison is inevitably limited by the independent conduct of the studies on which we draw. However we can point to several ways in which institutional structures and practices have an important influence on the potential of PPGIS. First and foremost, cross-cultural studies help to reveal 'cultural givens' or those implicit structures and values that influence the sense of agency of PPGIS users possess. These 'cultural givens' frame the willingness and ability of people to participate in local planning process, the perceived "costs" of participation, and the motivation and commitment required to engage in technological endeavours like the creation of a community-integrated GIS.

Second, a focus on institutional structures and practices associated with urban planning and local government also serves to expose how foundational ideologies and principles constitute differing roles for the 'state' and the local community. The US and the UK are both representative democracies upholding free-market values. Yet, in the London workshops, the perceived view of local planning authority as operating in the "public interest" provides justification for the view that the local authority should be sufficiently 'enlightened' to provide and maintain a GIS capable of being used effectively as a planning tool. In the US cases, the role of the community, the structure of the urban development process and the expectations of "self help" all seem to constitute the community as the locus of PPGIS.

Third, in advancing the contribution cross-cultural studies can make to the wider research agenda and its focus on the societal implications of PPGIS we would advocate a collaborative approach among GIS scientists, technicians and social scientists. Our own approach is a collaborative one that is responsive to new technological innovations in GIS and to discursive approaches to the analysis of public attitudes and experience of PPGIS. By paying close attention to the arguments and values that underpin public evaluations of PPGIS as a planning tool we aim to reveal some of the more subtle ways in which 'cultural givens' impinge on public attitudes and which other more conventional social science methods tend to discount.

Finally, we agree with Harris and Wiener (1998) who note "the social and environmental impacts of GIS are therefore contingent upon a particular mix of historical, socio-economic, political, and technological conditions in particular places" (p. 68). The comparison of the American and British case studies demonstrates the differences that those specific conditions engender and perpetuate. We argue that assumptions about the empowerment capabilities of PPGIS and the inclusionary potential of local state-owned GIS, should be treated with caution. More

contextualised approaches are required when evaluating which techniques from the growing PPGIS "tool box" are more or less effective in specific settings. We suggest that critical studies of PPGIS practice will reveal how public use and appraisals of these systems are enmeshed in institutional structures and practices associated with planning that perpetuate existing power structures and only infrequently assist in challenging them. Accepting the validity of this approach suggests that a more adaptive strategy to the development and promotion of PPGIS is required.

Acknowledgements

The authors would like to thank Francis Harvey, Rina Ghose, David Unwin and Paul Torrens for their comments on an earlier version of this paper, presented at the 98th Annual Meeting of the Association of American Geographers, Los Angeles,

Notes

[1] We have not tried to draw conclusions from cases where unique set-up of software were used such as those described by Shiffer (1995a, 1995b, 1999) or Jankowski and Nyerges (2001) in the US and Horita (2000) or Kingston *et al* (2000) in the UK, although we relate to them where appropriate.

[2] though some internet service providers offer such monthly subscription in the UK, this is done with relatively high costs, and computers are still perceived as expensive (Harris, 2000). Even at 2002, unmetered access in the UK cost about 20$ per month, while in the USA $10

[3] The recent Planning Green Paper (DTLR, 2002) calls for more community participation in the strategic planning process, but does not offer the same opportunities for participation in the development control process.

References

Al-Kodmany, K. (1998). GIS and the Artist: Shaping the Image of a Neighborhood in Participatory Environmental Design, In *Empowerment, Marginalization, and Public Participation GIS Varenius meeting, Santa Barbara, CA, 14-17th Oct. 1998*, URL: http://www.ncgia.ucsb.edu/varenius/ppgis/papers/.

Al-Kodmany, K. (2000) Extending Geographic Information Systems to Meet Neighborhood Planning Needs: The Case of Three Chicago Communities, *URISA Journal*, **12**(3), 19-37.

Bartholomew, K. (1999) The Evolution of American Nongovernmental Land Use Planning Organizations, *Journal of the American Planning Association*, **65**(4), 357-363.

Boott, R., Haklay, M., Heppell, K. and Morley, J. (2001) The Use of GIS in Brownfield Redevelopment in *Innovations in GIS 8: Spatial Information and the Environment*, Halls, P. (Ed.), Taylor and Francis, London.

Carver, S. (2001) *Participation and Geographical Information*: a Position Paper. Paper presented at the "ESF-NSF Workshop on Access to Geographic Information and Participatory Approaches Using Geographic Information", Spoleto, 6-8 December 2001

CPRE (The Council for the Protection of Rural England) (1999) *Planning for People*, 30 pp., London.

Craig, W.J. and Elwood, S. (1998) How and Why Community Groups use maps and Geographic Information, *Cartography and GIS*, **25**(2), 95-104.

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

Cullingworth, B. and Nadin, V. (2002) *Town & Country planning in the UK (13th Ed)*, London: Routledge.

Cullingworth, B. (1993) *The Political Culture of Planning: American Land Use Planning in Comparative Perspective*, London: Routledge

Cullingworth, B. (1997) *Planning in the USA: Policies, issues and processes*, London: Routledge.

Davis, A.R. (2001) Hidden or Hiding? Public Perceptions of Participation in The Planning System, *Town and Planning Review*, **72**(2), 193-199

DETR (Department of Environment Transport and the Regions) (1998a) *Modernising Planning*. London: DETR

DETR (1998b) Modern Local Government: In Touch with the People. Cm 4014 London:

DTLR (Department of Transport, Local Government and the Regions) (2002) Planning: Delivering A Fundamental Change. Wetherby: DTLR

Elwood, E. (2002) The impact of GIS use for neighbourhood revitalization in Minneapolis, in Craig, W.J., Harris, T.M., Weiner, D. (Eds.), *Community Participation and Geographic Information Systems*, London: Taylor and Francis., 77-88

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

Forester, J. (1989) Planning in the Face of Power, University of California Press

Ghose, R. (2001) Use of information technology for community empowerment: transforming Geographic Information Systems into community information systems. *Transactions in GIS* **5**(2) 141-163

Ghose, R. & Huxhold, W.E., (in press), Developing GIS-Based Indicators Studies for Assessing Housing and Neighborhood Quality: The Case of Milwaukee, URISA journal.

Ghose, R., & Huxhold, W. E. (2001) Role of Local Contextual Factors in Building Public Participation GIS: The Milwaukee Experience. *Cartography and Geographic Information Science*, **28**(3), 195-208.

Goodchild, M. F. (2000) Communicating Geographic Information in a Digital Age. *Annals of the Association of American Geographers* **90**(2) 344-355

Harris, K. (2000) *"Everyone gets hooked" exploring ICTs in low-income neighbourhoods*, Community Development Foundation, 42 pp.

Harris T, Weiner D. (1998) Empowerment, Marginalization and 'community-integrated' GIS, *Cartography and Geographic Information Systems*, **25**(2) 67-76

Harris T.M., Weiner, D., Warner, T. and Levin R. (1995) Pursuing Social Goals Through Participatory GIS: Redressing South Africa's Historical Political Ecology, Pickles, J. (Ed.) *Ground Truth: The Social Implications of geographic information systems* , New York: Guilford Press. 196-222

Harrison, C and M. Haklay (forthcoming) The potential of Public Participation GIS in environmental planning: the findings of two public workshops. (submitted to Journal of Environmental Management).

Healey, P. (1997) *Collaborative Planning: Shaping Places in Fragmented Societies.* Basingstoke: Macmillan

Horita, M. (2000) Mapping policy discourse with CRANES: spatial understanding support systems as a medium for community conflict resolution *Environment and Planning B: Planning and Design* **27**(6) 801 - 814.

Howard, D. (1998) Geographic information Technologies and Community Planning: Spatial Empowerment and Public Participation, In *Empowerment, Marginalization, and Public Participation GIS Varenius meeting, Santa Barbara, CA, 14-17th Oct. 1998*, URL: http://www.ncgia.ucsb.edu/varenius/ppgis/papers/.

Innes, J. (1999) Consensus building in complex and adaptive systems: a framework for evaluating collaborative planning. *Journal of the American Planning Association* **65**(4) 412-423

Jankowski P., Nyerges T. (2001) *Geographic Information Systems for Group Decision Making: Towards a Participatory Geographic Information Science*; : London: Taylor and Francis

Kingston, R., Carver, S., Evans, A. and Turton, I. (2000) Web-based public participation geographical information systems: An aid to local environmental decision-making *Computers, Environment and Urban Systems* **24**(2) 109-125.

Leitner, H, McMaster, R, Elwood, S, McMaster, S and Sheppard, E. (1998) Models for making GIS available to community organization: Dimensions of difference and appropriateness, in Craig, W.J., Harris, T.M., Weiner, D. (Eds.), *Community Participation and Geographic Information Systems*, London: Taylor and Francis., 37-52

Nunamaker, J. F., Dennis, A. R., Valacich, Joseph S., Vogel D. and George, J. F. (1991) Electronic Meeting Systems, *Communications of the ACM*, **34**(7), 40-61

Pickles, J. (1995) Representations in an Electronic Age: Geography, GIS and Democracy. In Pickles, J. (Ed.), *Ground Truth: The Social Implications of Geographic Information Systems*. Guilford Press: New York, 1-30.

Rydin, Y. and M. Pennington (2000) 'Public participation and Local Environmental Planning: the collective action problem and the potential of social capital'. *Local Environment* **5** (2) 152-169

Rydin, Y. (1998) *Urban and Environmental Planning in the UK*, London: Macmillan.

Sawicki, D.S. and Craig, W.J. (1996) The Democratization of Data: Bridging the Gap for Community Groups, *Journal of the American Planning Association* **62**(4).

Schroeder, P. (1997) GIS in public participation Settings, Paper presented at *University Consortium for Geographic Information Science (UCGIS) 1997 Annual Assembly and Summer Retreat*, Bar Harbor, Maine, June 15 - June 21, 1997, Available WWW: http://www.spatial.maine.edu/ucgis/testproc/schroeder/UCGISDFT.HTM accessed 17 May 2001

Shiffer, M. J. (1995a) Environmental Review with Hypermedia Systems *Environment and Planning B,* **22,** 359-372.

Shiffer, M. J. (1995b) Interactive Multimedia Planning Support: Moving from Stand-alone Systems to the World Wide Web *Environment and Planning B,* **22,** 649-664.

Shiffer, M. J. (1999) Managing Public Discourse: towards the augmentation of GIS with Multimedia. In Longley, .P., Goodchild M. F., Maguire D. J. and Rhind. D. (Eds.) *Geographical Information Systems*. New York: John Wiley & Sons Inc.: 723-732.

Sieber, R. E. (2000) Conforming (to) the opposition: the social construction of geographical information systems in social movements *International Journal of Geographical Information Science* **14**(8) 775-793

Sieber, R. E. (in press) Public Participation Geographic Information Systems Across Borders, *Canadian Geographer*

Talen, E. (1999) Constructing neighbourhoods from the bottom up: the case for resident-generated GIS, *Environment and Planning B: Planning and Design*, **26**(4), 533-554.

Talen, E. (2000a) Bottom-Up GIS: A New Tool for Individual and Group Expression in Participatory Planning, *Journal of the American Planning Association*, **66**(3), 279-294

Talen, E. (2000b) The Problem with Community in Planning, *Journal of Planning Literature*, **15**(2), 171-183

Tewdwr-Jones, M. and Thomas, H. (1998) Collaborative Action in Local Plan Making: Planners' Perceptions of 'Planning Through Debate', *Environment and Planning B*, *25*, 127-144.

The Economist (2001) The Blob that Ate East Texas, *The Economist [CD-ROM]* Available: Chadwyck-Healey/The Economist on CD-ROM/ECN 23 Mar 2001 [Accessed 2001, Dec 17].

Thomas, H. (1996) Public participation in planning in Tewdwr-Jones, M (ed) British Planning Policy in Transition: Planning in the 1990s. UCL Press: London 168-188