

Participatory Design in a Low-Income, Immigrant Neighborhood: A Practitioner's Perspective

Tad Hirsch
M.I.T. Media Laboratory
20 Ames Street
Cambridge, MA 02139-4307
(617) 253-5108
tad@media.mit.edu

Jeremy Liu
Asian Community Development Corporation
888 Washington Street, Ste 102
Boston, MA 02111-1426
(617) 482-2380
jeremy@asiancdc.org

ABSTRACT

This paper describes the design of a telephone-based knowledge sharing system for Boston's Chinatown neighborhood. The authors consider participatory design methods from a practitioner's perspective, point out specific challenges posed by working in low-income, immigrant neighborhoods, and consider the role that participatory design can play in addressing immediate needs and long term goals for urban communities.

Categories and Subject Descriptors

H.4.3. [Information Systems Applications]: Communications Applications – *Computer conferencing, teleconferencing, and videoconferencing*; H.5.2. [Information Interfaces and Presentation]: User Interfaces – *Evaluation/methodology, theory and methods, user-centered design*; H.5.3. [Information Interfaces and Presentation]: Group and Organization Interfaces – *Collaborative computing, Computer-supported cooperative work, evaluation/methodology, theory and models*; K.4.2 [Computers and Society] Social Issues

General Terms

Design, Human Factors, Theory

Keywords

Participatory design, community networks, immigrant communities, grassroots computing, community empowerment

1. INTRODUCTION

Participatory design (PD) offers opportunities for residents of low-income urban neighborhoods to develop technologies that address their specific needs. However, practitioners working in these communities face a number of challenges, including limited resources, cultural and language differences, and conflicting interests among residents, institutions, and designers. Overcoming these obstacles requires creative approaches to the design process, and willingness to consider both the immediate design problem at hand and the broader social context in which design activity occurs. In this paper, we describe the development of a telephone-based knowledge sharing system for Boston's Chinatown neighborhood, designed in cooperation with members of the

Chinatown community. We consider PD methods from a practitioner's perspective, reflecting on how local context shapes the design process.

2. BACKGROUND AND RELATED WORK

The use of networked communications technology to connect and empower residents of a particular geographic area is often referred to as "community networking," and dates back at least to the 1970's Berkeley "Community Memory Project" [6]. Well-known community networks include the Blacksburg Electronic Village [2] and the Cleveland Free-Net [1]. A recent study revealed approximately 500 community network projects worldwide [3].

Recent scholarship suggests that community networking initiatives are enhanced by PD practice [7]. However, applying PD methods to low-income communities is not a simple matter. While the range of "participatory design" projects includes both overtly Marxist efforts to promote workplace democracy and corporate software development practices [11], PD has largely been employed to develop software for computer-supported work [4]. Communities and workplaces are substantially different environments, so it is unlikely that PD methodologies developed for work settings can be exported for community practice without alteration. The methods employed in a given project are largely dependant on the objectives of the work, which vary according to scope and participation [8], as well as by setting. Community populations tend to be more heterogeneous with more varied tasks and personal relationships than are typically found in business organizations [3]. Unlike business units, community groups rarely coordinate their agendas at the operational level; also motivation and reward structures don't easily translate from one setting to the other.

3. SPEAKEASY

3.1 Description

Speakeasy is an integrated Internet and PC-telephone service that connects immigrants with volunteer "Guides" – multilingual community residents who are familiar with neighborhood concerns, local resources, and social service systems. Guides provide real-time language interpretation and help neighborhood residents navigate the social service system. Where appropriate, they also suggest non-institutional solutions to problems, including, for example, references to neighborhood service providers such as handymen and babysitters. *Speakeasy* can also be used in face-to-face encounters, allowing Guides to act as

In PDC-04 Proceedings of the Participatory Design Conference, Vol 2, Toronto, Canada, July 27-31, 2004, under a Creative Commons license. CPSR, P.O. Box 717, Palo Alto, CA 94302. <http://www.cpsr.org> ISBN 0-9667818-3-X

virtual interpreters for parent-teacher conferences, doctor appointments, and visits to local government agencies.

Guides register their telephone numbers, areas of expertise, and availability using a scheduling application on the *Speakeasy* web site. To access *Speakeasy*, immigrants call a dedicated telephone number and indicate their native language using their telephone keypad. They are then connected to an available Guide. After discussing the caller's needs and presenting possible solutions, the Guide may initiate a conference call with a city agency or social service provider.

After the call is completed, the Guide records a brief report describing the call and its outcome (personal data about the caller is not recorded). This information gives community organizers important insights into the neighborhood's changing needs.

3.2 Design

3.2.1 Community Context

Boston's Chinatown is an inner-city neighborhood with a substantial immigrant population. The "Chinatown community" also includes several enclaves of Chinese and Chinese-American residents living in suburban areas outside the city. Many individuals in these outlying areas are former Chinatown residents who have achieved some degree of social and economic advancement. The migration of these individuals from Chinatown represents a loss of resources and entrepreneurship to the inner-city neighborhood, as well as a weakening of the community's social fabric. While much of the suburban community returns to the city on a regular basis to shop and eat, anecdotal evidence indicates that many suburbanites wish to maintain stronger ties to the inner-city neighborhood. One of the long-term research questions facing this project is whether *Speakeasy* can foster these relationships.

3.2.2 Participatory Methods

A participatory design approach was essential to overcome the significant language and cultural differences between the target users and the software developers. However, the community setting presented several challenges to participatory design practice.

Suggestions of conducting workshops with residents to assess needs and generate design concepts raised two major concerns. The Asian Community Development Corporation (ACDC), the project partner, has conducted such sessions in the past, and regularly hosts neighborhood group meetings. Holding additional sessions seemed unlikely to produce new insights. More importantly, publicly announcing university involvement in a new project had the potential to raise expectations within the community that we would not be able to meet. Prior experience has shown that inner-city residents often perceive the university as a wealthy institution capable of doling out money and equipment however it sees fit. This can lead to expectations of resources and support that cannot be met by an unfunded project fueled solely by a graduate student's enthusiasm. The additional knowledge that many design projects fail to yield a working system raised similar concerns about trust and the potential for jeopardizing relationships between residents, ACDC, and the university that can come from failing to meet expectations.

User participation was also affected by several practical considerations. The intended users were dispersed across a wide

geographical area, and did not necessarily share an organizational or institutional affiliation with one another. In addition, participation in the project was entirely voluntary, competing with such other responsibilities as work, family, and social obligations.

To balance the goals of democratic empowerment with the realization that design is a time-consuming, difficult task, we developed a tiered model of participation. A core design team responsible for administration, implementation, and day-to-day operations was comprised of "community representatives" – ACDC staffers familiar with local needs, and also comfortable speaking English and interacting with university representatives.

As the project evolved, the design team's efforts were complimented by a larger group of neighborhood residents who participated in workshops, focus groups, and user studies. These residents were recruited from among participants in programs hosted by ACDC and the Boston Chinatown Neighborhood Center (BCNC), another community-based organization. ACDC and BCNC staff facilitated sessions with residents in English and Chinese.

Finally, a network of "consultants," including neighborhood residents, community activists, and Boston City officials participated in informal project presentations and discussions. Although their input was solicited infrequently, consultants provided valuable "reality checks" that helped ensure that the design team remained cognizant of the variety of interests that would ultimately determine its success.

3.2.3 Design Drivers

The design team identified several "design drivers": desired outcomes to guide the design process. While many of these are fairly common to any software design project (for example, that the system be usable and effective), there were several drivers that are unique to the community context. Given the limited financial resources available to the Chinatown neighborhood, and the desire to develop a system that could be adopted by other low-income neighborhoods, it was important that the system be relatively inexpensive to implement and maintain. As a result, the design relies on existing telecommunications infrastructure (i.e. telephones rather than, say Wi-Fi networks), and uses open-source software and "outdated" computers that are readily available at relatively low cost.

Design drivers also included strategic goals – long-term objectives that were beyond the scope of the *Speakeasy* project, but which we nonetheless hoped to influence. The most important strategic goal was to provide an opportunity to strengthen and build social networks among individuals and institutions within the Chinatown community. Ultimately, we hope to foster civic engagement, strengthen ties between social service agencies, and help the neighborhood build social capital. This is manifest in the projects' emphasis on facilitating communication between community members, engaging residents in the design process, and partnering with several neighborhood associations to recruit participants.

3.2.4 Design Process

Initial brainstorming by the design team led to several project concepts addressing such neighborhood concerns as public safety, environmental pollution, and community media. Based on feasibility, available resources, and community need, we decided to focus on public safety. Several recent robberies in the

neighborhood had heightened local concern with crime and had motivated the ACDC to host a series of community-wide discussions about public safety. One of the outcomes of these sessions was recognition that language presented an insurmountable barrier to many Chinatown residents' access to vital government services, including police and 911 emergency response.

From this insight came the idea of a community-based translation service. Recognizing that there are a number of multilingual residents – especially youth – living in Chinatown, and that access to telephone technology by residents is nearly ubiquitous, the team developed the concept of a telephone-based service that would connect non-English speakers with volunteer translators, and support three-way calling to police and emergency-response services.

The design team presented the concept to Chinatown residents, as well as to several experienced community organizers and technology developers. These sessions helped to identify a wider range of situations in which residents might benefit from a translation service, and also highlighted some of the sociolinguistic factors that mitigate immigrant access to social services, including awareness of available services, fear and mistrust of government agencies (especially the Immigration and Naturalization Service), and feelings of helplessness and isolation. Discussions with community members also revealed the common practice of immigrants relying on informal networks of friends and family members to overcome language and access barriers, and the widespread use of mobile telephones by residents. For the design team, these “socially meaningful” practices provided terra firma on which to ground our design [13].

Informed by community members' input, the design team created several scenarios that guided the system design. These included both telephone-based experiences (e.g. reporting noise complaints, requesting service from utility companies) and face-to-face encounters such as automobile registration and parent-teacher conferences. Through these scenarios, we developed the concept of “community guides” – multilingual community residents who are familiar with social service options and with neighborhood and cultural issues. We also decided to focus on “quality of life” rather than emergency-response services. This decision was motivated both by concern about legal liability and by the expectation that users of the system were far more likely to need to report noise complaints or ask questions of the housing department than to require emergency fire or police response.

Once the concept was defined, design activities focused on prototype development and interface design. Concurrently, efforts began to recruit community members to participate in an evaluation of the *Speakeasy* system. An initial demonstration was completed in December of 2003. After a brief round of usability testing, a second prototype was completed in March of 2004.

4. EVALUATION

Speakeasy was deployed for a two-week evaluation in Boston's Chinatown. The service was made available to approximately 200 students in the BCNC English language program. 26 Guides were recruited from Boston's Chinese-speaking community

Surveys were administered to 8 Guides and 30 users to collect demographic data and to assess attitudes and usage patterns. 5 Guides also maintained diaries throughout the evaluation period,

which were used to record details about each call. Finally, informal interviews were conducted in person and via e-mail with several Guides and users.

Speakeasy was used for a variety of tasks. Users called with questions about citizenship and immigration, transportation, education, entertainment, housing, healthcare, and utilities. While many calls required language interpretation, others were simply requests for information and agency referrals that Guides were able to answer from personal experience or by performing Internet searches. This finding confirms prior research indicating that language barriers are bound up with other issues, including lack of awareness of available resources and confusion caused by complex bureaucracies. The variety and complexity of user needs also suggests the need for more sophisticated algorithms that match callers to guides based on knowledge domains as well as language ability.

User response was extremely positive. Most found the telephone interface intuitive and easy to use, and thought that *Speakeasy* was a valuable idea that addresses a real need. Only one said that he would neither use *Speakeasy* again nor recommend it to his family and friends. Several users were surprised that *Speakeasy* was being offered as a free service, and others requested that we extend its hours of operation.

Guides were similarly positive in their assessment. They believed that *Speakeasy* is an important service, and most agreed to continue their involvement. Several guides expressed a desire to arrange face to face meetings with callers, which points to an interesting potential for incorporating location-awareness technology to facilitate pairing callers with nearby guides.

An interesting (if not entirely surprising) finding is that guides' participation was motivated by a desire to help others. It will be important to foster altruism in the design of incentive and reward programs that encourage ongoing participation by volunteers.

5. DISCUSSION

As an engineering methodology, participatory design was developed primarily for workplace use. Situating a participatory design project in a community setting changes the relationship between the participants and the process in several respects, and challenges interested parties to develop new processes that can be effective in the absence of authority structures, financial incentives, or institutional support.

Participation in a community-based design project is wholly voluntary, and is balanced against a host of other responsibilities, including job, family, and social obligations. At the same time, design – particularly at the early stages of a project, when objectives, constraints, and concepts are still undefined – is often a slow, time-consuming process involving missteps and dead-ends. When working with community members, project managers have a heightened responsibility to ensure that participant time is used as effectively as possible, and that participants believe that the project is worthwhile and will provide some fairly tangible benefit. This has implications for deciding where, when and how to involve participants – for example, inviting participation before project parameters have been established may seem like a waste of participants' time; while inviting participation after all major decisions have been made can create the perception that participants' input is not valued. To address these issues, we

adopted a tiered approach to participation that affords a variety of relationships and accommodates varying degrees of interest, expertise, and availability. In practice, this was manifest as a small team of designers and community representatives responsible for day-to-day operations, complemented by formal and informal interactions with the broader community to garner feedback, evaluate concepts, and develop new ideas. We also staggered resident involvement, working with a small number of community members at the preliminary stages of the design process and increasing participation as the project gained momentum.

Concurrently, it is important to carefully manage participant expectations. In many underserved communities, residents are inclined to distrust outsiders, and may be hesitant to participate in new projects. Close partnerships with local actors can be extremely valuable in overcoming this obstacle, but also heightens the importance of clearly establishing realistic expectations for the project's outcomes, ensuring that goals are met, and communicating outcomes to the participants. Failure to do so can reinforce mistrust of external actors and organizations, and may also jeopardize relationships within the community. For our project, the leadership roles played by ACDC and BCNC – respected community organizations – helped to mitigate these concerns.

While participatory practice is often structured around workshops, focus groups and user testing, we found significant value in informal, unstructured interactions among participants to complement more structured design activities such as brainstorming, focus groups, and user testing. Our design process also required great flexibility in the face of changing or conflicting interests and constraints. 'Real world' projects inevitably involve confronting factors outside the designers' control, including availability of resources, technical capabilities, legal issues, and balancing the various goals of individuals and institutions. In the face of changing – and often conflicting – capabilities and constraints, a great deal of flexibility is required. In the case of Speakeasy, the project concept and system design shifted considerably during the design process as needs and opportunities changed. The design team's capacity for navigating this shifting territory was greatly enhanced by the consideration of both instrumental and strategic goals, and the ability to prioritize as necessary.

This distinction between instrumental and strategic design goals is an important outcome of this project. We suggest that successful community technology projects will consider both. Setting instrumental goals, as identified by the daily experience of a given community, enables the design of artifacts that concretely solve problems in a socially meaningful way. We believe that community networking can also be a stepping-stone to broader, strategic goals of institutional and community development, particularly when coupled with participatory design methods. Direct involvement of community members in identifying concerns and solving problems fosters independence and local autonomy, and improves a community's sense of "collective efficacy" – the community's perception of its ability to take action and affect change, a prerequisite for actually taking such

action [10,3]. In addition, the collaborative nature of design can promote the development of "social capital" [9,5] – informal social networks that facilitate political and economic empowerment through collective action. These "second-order" [12] effects may be the best hope that technology offers for empowering underserved constituencies and redressing social inequities.

6. REFERENCES

- [1] Beamish, A. "Communities On-Line: Community-Based Computer Networks," Masters Thesis, Department of Urban Studies and Planning, Massachusetts Institute of Technology, 1995.
- [2] Carroll, J.M., Rosson, M.B. "Developing the Blacksburg Electronic Village," *Communications of the ACM*, 39:12, 1996.
- [3] Carroll, J.M. and Rosson, M.B., "Better Home Shopping or New Democracy? Evaluating Community Network Outcomes," *Proceedings of SIGCHI'01*, 2001.
- [4] Clement, A. and Van den Besselaar, P., "A Retrospective Look at PD Projects," *Communications of the ACM*, 36:4 (June, 1993).
- [5] Coleman, J, "Social Capital in the creation of Human Capital, *American Journal of Sociology*, 94 (supplement, 1988).
- [6] Farrington, C. and Pine, E. "Community Memory: A Case Study in Community Communication," in *Reinventing Technology, Rediscovering Community*, ed. P. Agre and D. Schuler, Ablex Publishing, Norwood, NJ, 1997.
- [7] Gurstein, M., "Effective Use: A Community Informatics Strategy Beyond the Digital Divide," *First Monday* 8:12(December, 2003), http://firstmonday.org/issues/issue8_12/gurstein/index.html.
- [8] Muller, M.J., Wildman, D. M., White, E. A., "Taxonomy of PD Practices: A Brief Practitioner's Guide," *Communications of the ACM*, 36:4 (June, 1993)
- [9] Putnam, R.D. *Bowling Alone: The Collapse and Revival of American Community*. Simon & Schuster (New York), 2000
- [10] Sampson, R.J., Raudenbush, S.W., Earls, F. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy," *Science* 277(August 15, 1997).
- [11] Spinuzzi, C., "A Scandinavian Challenge, a US Response: Methodological Assumptions in Scandinavian and US Prototyping Approaches," *Proceedings of the 20th annual international conference on Computer documentation (SIGDOC'02)*, 2002
- [12] Sproull, L. and Kiesler, S. *Connections: New Ways of Working in the Networked Organization*. MIT Press (Cambridge, MA), 1991.
- [13] Warschauer, M., "Reconceptualizing the Digital Divide," *First Monday* 7:7(July2002), http://firstmonday.org/issues/issue7_7/warschauer/index.html