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RESEARCH ARTICLE

Community in the information age: Exploring the social potential of web-based technologies in landscape architecture and community design

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Abstract

Critics have pointed at new technologies as culprits in the decline of civic life, neighboring and social capital construction in Western societies. When applied to community design and planning processes, technologies can empower residents to actively engage in decision-making, foster connections across social groups, with positive consequences on life and socialization in public spaces. What kind of participation do technologies foster? And is it the kind that bridges social and ideological divides?

The 2012 community design process for Hawthorne Park in Medford, Oregon illustrates many of the challenges and opportunities connected to the use of new technologies in design. In the process, technologies were instrumental in enlisting a larger-than-usual number of residents to participate in the design of the park. Blogs and online questionnaires were successful in gathering people's thoughts on the design choices being made, but also favored a limited, intermittent form of engagement. The results are synthesized in principles for the successful integration of web-based technologies in future community design efforts: adaptability, full participation, nuanced participation and the need for links to the physical realm.

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1. Introduction

This study explores the potential of integrating web-based technologies into community design processes. Community design, which used to be at the margins of the environmental design profession, has been institutionalized and mandated by law in ecologically and socially sensitive projects. Engaging communities in redeveloping and preserving culturally or ecologically significant landscapes has been recognized internationally (Déjeant-Pons, 2006).

The Internet has changed the way people live, work, and socialize; thus, it has prompted new research on the effects of information and communication technologies on the civic life and social responsibilities of individuals (Hudson-Smith et al., 2005; Castells, 1996). Through thick description (Geertz, 1973), this case study sheds light on the possibilities and pitfalls connected with the integration of web-based technologies in participatory decision-making and social capital construction processes.

In 2012, an Internet-based digital platform created by the author, i.e., the Community Design Project (CDP), was used to engage residents in redesigning Hawthorne Park in Medford, Oregon. The platform tested the perceptions of goals established by the local council and gathered the visions of residents for a new park. CDP helped the design team gather citizen feedback on park design options and provided insight into the quality of citizen engagement and social capital construction. A total of 1553 Medford residents participated in the design process through the CDP interface. Although the turnout was considerably higher than those registered by face-to-face charrettes, the success of CDP raised issues on the quality, depth, and motivation of the participants.

2. Background

2.1. Civic engagement in the Internet age

While traveling around the United States in the 1830s, Frenchman Alexis de Tocqueville observed the commitment of the American society to democracy and solidarity. By working together, American citizens realized goals that would have otherwise been impossible for individuals to achieve (De Tocqueville, 2003); this practice eventually contributed to the identity of the country as a beacon of democracy. At present, the participation of Americans in civic life is at its historic low. The United States ranks 120th out of 169 countries in vote-to-registration ratio (Pintor and Gratschew, 2002). For example, in the state of Oregon, voter turnout dropped by 20% between 2000 and 2010 (Oregon Secretary of State, 2014).

This disinvestment in civic life has eroded the trust of the people in public good, and only one out of 10 Americans has regular contact with a public official or a government agency (Kanter and Schneider, 2013). Commentators and researchers have blamed the declining civic engagement on the educational system, which has eliminated civics from its curriculum, and thus, has left younger generations without a means to learn about and practice democracy (Gencarella-Olbrys, 2004; Ruggeri, 2014).

2.2. Community design practice

In the United States, landscape architects Randolph Hester Jr. and Mark Francis, architect Sam Mockbee, and community planner Henry Sanoff were among the first to react against top-down modernist planning by engaging communities in decision-making. Through bottom-up processes and public workshops, they gave voice to underserved citizens and preserved daily landscapes against wholesale urban renewal plans (Hester, 1999; Loukaitou-Sideris, 2000). Only during the rise of the environmental movement in the 1970s was public participation mandated by law to resolve contentions and build consensus around ecologically sensitive projects. The institutionalization of community engagement has motivated several design firms to specialize in community design processes.

Community-based processes have become alternatives to traditional politics, particularly in communities where the aging or shrinking population makes traditional governance difficult to implement (Kot and Ruggeri, 2005). Landscape architects are leading projects that are shifting public discourse from decline toward renewal and regeneration. These processes also call for the integration of the collective intelligence of a community with expert knowledge (Park, 1993, 1999). Through the collective redesigning of old parks, vacant lots, and brownfield sites into productive landscapes, residents can simultaneously engage in deliberative democracy and practice solidarity and cooperation, which used to characterize American civic life (Sanoff, 2005; Horrigan, 2014).

2.3. Social capital

In the 1990s, sociologist Robert Putnam began to use census data on voting, volunteering, and participation in civic life to show a shift from a society of civic mindedness and cooperation to one dominated by individualism and private interests (Putnam, 1995; Lane, 2000). Many factors have played a role in this phenomenon, including women entering the workforce in mass and the influence of media such as television, the Internet, and social media, which are consuming an increasing amount of the spare time of citizens and limiting their ability to socialize. A 2010 resident survey of a California master-planned community indicated that residents would socialize with neighbors for only a few minutes a week and would spend virtually no time talking to strangers in public places (Ruggeri, 2009).

Although socialization continues to exist, it has taken on new forms and people are favoring a “bonding social capital,” or socialization based on shared religious beliefs and lifestyles over the more democratic and civic-minded “bridging social capital,” whereby people interact across socioeconomic, political, and religious boundaries (Putnam, 2003). Researchers have operationalized social capital as the result of trust, reciprocity, norms, social agency, and diversity (Onyx and Bullen, 2000; Putnam, 2000, 2001, 2003). Similarly, proactivity and social agency indicate a willingness to take the initiative to preserve one’s neighborhood. Tolerance and diversity necessitate acceptance of social differences and ethnic diversity (Onyx and Bullen, 2000). By providing opportunities for social capital construction, community design is integral in redefining a community.

2.4. Network society

Like most of the western world population, Americans spend over 3 h a day in social media (Ipsos, 2014); however, they only interact with people of similar backgrounds and values and not with strangers (Calhoun, 2007). Smartphones and computers are shrinking our public realm, changing perceptions about public life, and potentially weakening civic engagement and social capital.

These technologies can be leveraged to achieve a more open and democratic society, and thus, offer new “terrains” of civic life (Castells and Cardoso, 2006). When used sensitively and in conjunction with traditional methods, open-source software and smartphones can help citizens organize, facilitate reaching a consensus, and promote change in a community (Castells and Cardoso, 2006; Apostol et al., 2013).

Despite their numerous benefits, digital technologies have raised important concerns related to justice. First, free and uncensored wireless access cannot be taken for granted. Even in the information age, wireless technology remains either financially or geographically inaccessible in a large part of society. Second, although many of their functions have changed as a result of the digital revolution, contemporary communities remain simultaneously global and local. They require both digital and physical forms of trade, communication, or self-programmable labor. Research has shown that bloggers are likely to engage in community-based activities, and online communication may strengthen the connection of people to their localities. This *complementarity* approach suggests that computers can benefit social capital construction and community life (Mesch and Talmud, 2010; Haythornthwaite and Kendall, 2010).

2.5. Engaging communities in virtual space

Through digital media, communities are helping environmental planners gain a comprehensive understanding of the relationships between communities and their physical environments. Participatory geographic information system (GIS) platforms, such as Geodesign and VGIS, have been successful in transforming expert-driven mapping into a democratic data-collection tool, which allows the relatively unskilled public to generate and edit maps, seek information, georeference observations, and offer opinions and critiques in spatial planning efforts (Grira and Bédard, 2009). At present, researchers have a comprehensive understanding of the processes by which GIS data are generated, represented, and disseminated through open-source technologies, and thus, they can effectively integrate these processes into environmental management planning and decision-making at the regional and local levels (Dunn, 2007; Hanzl, 2007).

Landscape architects who are interested in community design have yet to tap into the true potential of technologies and continue to rely on traditional forms of representation and engagement such as sketching, mapping, and collaging to involve residents in the conceptual and site design phases. “[Drawings] help designers express what other people think is important. They create a common language so complex publics can work together to make

their own habitation. They nurture and inform civic debate. They include the excluded and they make democratic design from the bottom up” (Hester, 2005).

Although using drawings to foster a comprehensive dialog within communities is a powerful tool, it can also emphasize the barrier between experts and locals. To overcome this challenge, community designers have included visual simulations, fly-through videos, and gaming interfaces in workshops and charrettes to test alternative planning schemes, educate the public about design concepts, or test the effect of new landscapes on user perceptions (Al-Kodmany, 1999; Girling, 2006). With an estimated 2.8 billion web users worldwide, new technologies can potentially offer a spontaneous, dynamic, and adaptable form of participation (Internet World Stats, 2014).

2.6. Thick description: Why telling stories matters

In the digital age, new and effective means of gathering evidence for the relationships of residents with their localities are necessary. Given their emphasis on statistical significance and generalization, traditional surveys and focus group methodologies may neglect to understand the important role that stories of drama, privilege, and injustice play in shaping the discourses, experiences, and perceptions of community members (Forester, 2009). “As planners, we are perpetual storytellers. We craft stories when we speak of projects and project managers, housing plans, activists, policies, and government officials” (Sandercock, 2003). Stories can considerably enrich planning efforts by offering a common ground for civic life. They can heal historic conflicts, reveal privileges and injustices, highlight successes, strengthen citizen identity, and compel citizens to question their values (Ganz, 2011). Emails, blogs, social media, personal profiles, and municipal and private web portals help such stories emerge by presenting comprehensive and accessible environmental information in multimedia formats (Sarkissian et al., 2010).

3. Research design and method

3.1. Case study: Redesigning Hawthorne Park

This study investigates a participatory process that involves using new information technologies in a community-based landscape architectural design process. The fundamental research questions are as follows.

- (1) Can web-based information technologies become integral parts of the toolkit available to community designers?
- (2) How can their use affect the quality of such participation?
- (3) What are some of the conceptual and practical challenges raised by the use of new technologies in community design?

The 2012 participatory process for redesigning Hawthorne Park in Medford, Oregon illustrates the effects of new technologies on citizen engagement and social capital (Figure 1). Although engaging residents in redesigning public space was not new to Medford, this project was the first time



Figure 1 Bird's eye view of Hawthorne Park showing its proximity to downtown Medford and the dominance of the freeway (Image courtesy of Bing Maps).

that the municipality used new technologies to reach out to its residents and expand the spectrum of opinions and perspectives to be included in the new design. Consequently, unprecedented levels of participation and consensus for a community of its size were achieved.

Medford City, the fourth largest city in Oregon, is 2.5 h north of the California border and east of Oregon Coast. Its population is over 75,000: 86% White, 13.8% Hispanic, and 0.2% others (U.S. Census Bureau, 2014). Hawthorne Park, which is located on a 20-acre site, has received city park designation in 1945. Its plan features an open lawn area, an outdoor pool, play areas, game areas, and a rose garden (City of Medford Oregon, 2013). The park has suffered a steady decline over the years and is now in disrepair. It remains relatively desolate and has attracted a transient population that is partly responsible for its reputation of being unsafe.

During an introductory public meeting, citizens and business owners revealed that they had not set foot in the park for years. Landscape architects realized that what they considered a straightforward rehabilitation project had turned into an effort that aimed to change perceptions, increase public safety, and overcome the stigma associated with the park. These perceptions provided the background for the participatory process that subsequently unfolded.

Similar to many public landscape architectural projects, redesigning Hawthorne Park required the collaboration of various professionals (Webber and Khademian, 2008). The design team assembled by the city included a landscape architecture company, an architecture group, a planning group, and an environmental service company. The author was a key project facilitator, and the Medford City Council, the Urban Renewal Board, and the local residents were the main stakeholders. Deliverables for the Medford Parks and Recreation Department included schematic plans, 3D models, renderings of the proposal, and a final report, which would assist the department in guiding future redevelopment.

3.2. Project timeline and steps

The project began in March 2012 when the Medford Urban Renewal Board approved the request for proposals (RFP). The RFP called for a six-month process organized into three community meetings and a public presentation to the Medford City Council and the Urban Renewal Board. The final deliverables were completed and submitted to the city in August 2012. From then on, Brian Sjothun, the director of the Medford Parks and Recreation Department, and the Medford Urban Renewal Board took over the project. The construction was scheduled to be completed by fall 2014.

In the RFP, both the Medford Urban Renewal Board and the City Council expressed the intent to engage the community in the consensus-building process through three public meetings and community design charrettes. Although the number and content of the meetings were set by the guidelines of the RFP, the city provided leeway to the design team to decide on the logistics. The first meeting was held on April 16, 2012 to introduce the members of the design team to local business owners, park employees, and residents. The designers asked the residents about their perceptions of safety, attachment to park features, goals, and the desired programmatic elements. During the first meeting, the design team set up three "stations," with each station focusing on the performance of a specific task in the participatory process (Figure 2).

The first station had a map of the existing Hawthorne Park. Participants placed stickers on the map to point out areas that required improvement and those valued as community assets. The designers recorded the feedback and made it available online. The second station solicited the hopes and goals of the residents for the future of the park. Keywords that described their perceptions were recorded and later analyzed using www.tagxedo.com, an online text analysis tool that would output results in word clouds (Figure 3).

The third station introduced the participants to images of potential programmatic elements from the "Leisure Services Plan" of the Medford Parks and Recreation



Figure 4 Image from the second public meeting (Image courtesy of Group Mackenzie).

develop a menu of features rather than a single winning proposal. The group activities, such as kit-of-parts, encouraged flexibility and interactivity. Participation levels varied significantly across the three public meetings, ranging from 14 to 47 participants.

Those who attended the meetings expressed excitement and satisfaction with the project. Despite initial resistance from some senior staff members, the design team members realized that a range of perspectives was required for the park design to express the visions of the citizens of Medford. To this end, the author researched web-based modes of participation and presented a new technological platform, i.e., CDP, which represented the digital equivalents of some of the participatory activities used during the public meetings.

4. CDP digital platform

The CDP interface was a flexible, web-based support tool that was developed to create an effective community-based redesigning of Medford's Hawthorne Park. The web-page was organized around three components. Each component replicated the face-to-face activities from the second public meeting in digital format. CDP was advertised to the community via local news channels, email flyers sent to the listservs of the Parks and Recreation Department, and a listing in the local newspaper. CDP users could access the digital platform through the website: www.communitydesignproject.org.

The home page of CDP included a table of contents (Figure 6), the goals of the project, and instructions. A web-based visitor could choose among three modes of participation.

- (1) *View and Download Details about the Project*
This mode included background information on the park and the results obtained from the first public meeting. The goals and intentions for the park were gathered from the RFP, and the workshop activities were explained to educate users on the objectives of the project.

- (2) *Review the Different Proposals for the Park*
Users could review the three park options crafted by the design team during the in-person community design workshops. Visitors could download, view, or compare the digital representations of the design proposals side-by-side. They could also evaluate each proposal through an online survey that replicated the kit-of-parts activity in the public meeting.

- (3) *Discuss and Communicate about the Park*

This online bulletin board and blog allowed community members to post their contact information followed by comments or questions. Discussion board entries were posted live.

The design team monitored the site and responded to questions and concerns. Data entered into the website were recorded, tracked, and analyzed using Google Analytics. This site provided the design team with a clear view of the process and opportunities for clarification and discussion (Table 1).

4.1. Data analysis and key findings

Information gathered through the CDP digital interface was analyzed using Google Analytics to compare the results with those of the face-to-face workshops, and consequently, determine the idiosyncrasies and unique benefits of using technologies in community design.

The results from the kit-of-parts proposal were recorded and presented online. The project team identified differences in the online kit-of-parts activity and the activity presented during the second public meeting. The city posted on the website and emailed the listservs of the city to notify the public that these differences would be discussed and hopefully resolved during the third and final public meeting. Incorporating the online results and the results from the second public workshop into the final meeting provided a broader understanding of public design preferences.

4.2. Kit-of-parts survey

A total of 203 survey entries were collected. The kit-of-parts exercise indicated strong preferences for the programmatic elements featured in each alternative proposal presented in the traditional workshops and provided a nuanced understanding of the differences in the evaluation of each design solution of the residents (Figure 7). For example, the survey entries indicated that the play area was the best plan in Proposal #2, whereas the dog park was preferred in Proposal #1. These findings were pivotal elements in shaping the final design of Hawthorne Park.

4.3. Bulletin board posts

From the perspective of social capital construction, the community bulletin board provided the most insights into the opinions of Medford citizens. This digital interface ultimately increased the quantity and quality of community engagement. A total of 101 comments were recorded and displayed. During the month-long trial period, CDP visitors could log into the platform and comment on the goals, safety, program elements, and value of the project. Visitors used the bulletin board to critique design solutions and express



Figure 5 Image of the adopted master plan (Image courtesy of Group Mackenzie).

appreciation or discontent for the web platform. Moreover, the freedom and confidentiality offered by the digital interface also allowed them to share other concerns. The amount and richness of information exchanged using the digital tool would have been difficult to achieve in traditional workshop settings, wherein activities would often be rigidly structured and peer pressure could cause some residents to abstain from sharing their opinions. By opening new and unexpected conversation threads, the CDP platform demonstrated potential as a tool for bridging social capital construction.

4.4. Interface challenges

Section 1 of CDP, which offered basic information about the project, was the least successful mode of participation included in the digital interface. Unlike in public meetings, where citizens had access to all the information required to make an informed decision, data from the digital platform showed that only 1 of every 10 people visited the educational section of the project background, compared with the kit-of-parts activity, which was accessed by 2 of every



Figure 6 Table of Contents of CDP (image courtesy of the author).

3 users. Those who educated themselves on the project background page spent an average of 4 minutes, compared with the 30-60 min dedicated to the same task during each public meeting. These findings cast doubt on the validity of the choices made by online users. Despite some potential for bias, participants in face-to-face meetings felt the need to educate themselves as well as to observe and gather opinions before voicing their own, which possibly led to improved decisions.

In a public meeting, participants will openly discuss and shape public discourse. This iterative process frequently leads to greater consensus and the refinement of concepts and solutions (Kot and Ruggeri, 2005). Given their physical detachment, CDP users were unable to participate in a truly dialogic and iterative manner. Only 1 out of 6 online visitors answered survey responses and only 1 out of 12 voiced opinions through the bulletin board. Nevertheless, residents posted ideas, asked questions, and discussed design solutions long after the public meetings ended, which was perhaps the most unique aspect of using such technologies.

5. Discussion

Given the limited experience in using new technologies in community design processes, reflecting and learning from

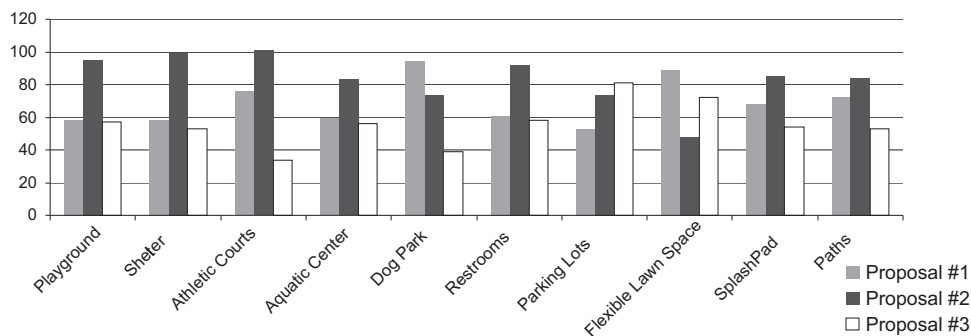
the case study of Medford may provide assistance in similar future efforts. The following principles may be applicable to the successful integration of web-based technologies into community design.

5.1. Technology can be used as a tool to increase adaptability

A fundamental principle in community design is related to the adaptability of the processes to the idiosyncrasies of its context. In traditional workshops, designers and experts can feel the mood in the room, react immediately, and adapt to challenges and unexpected reactions (Hester, 1999). The flexibility and adaptability offered by using a digital interface is well-suited to the “wicked” nature of community design and planning processes, which are long, involve multiple partners, and require complex solutions (Slevin, 2000; Webber and Khademian, 2008). In the Hawthorne Park redesigning process, CDP allowed the landscape architect/facilitator to react immediately to the lack of participation by offering a more flexible and customizable form of participation. Given its temporal flexibility, the interface allowed residents to engage at their own pace. This feature was particularly important in reaching out to people who would have otherwise been excluded, and might have constituted the most valuable contribution of the interface.

Table 1 Side-by-side comparison of data collected through the CDP digital interface vs. community meetings.

| CDP digital interface numbers | | | | | Traditional workshops | | | | |
|--|--------------|-----------|-----------|--------------|--|-----------|-----------|-----------|--------------|
| Process Duration | 30 days | | | | Process Duration | 106 days | | | |
| Visits/Participation | | | | | Visits/Participation | | | | |
| Single Visits | 1295 (83.5%) | | | | Single Visits | 58 (70%) | | | |
| Return Visits | 257 (16.5%) | | | | Return Visits | 26 (30%) | | | |
| <i>Total Visitors</i> | 1553 (100%) | | | | <i>Total Visitors</i> | 84 (100%) | | | |
| Average visit duration in minutes | | | | | Workshop duration in minutes | | | | |
| <i>CDP Visit</i> | 5' 51" | | | | Workshop Length | 120' | | | |
| Provenance of visitors | | | | | Provenance of visitors | | | | |
| <i>Medford Area</i> | 882 | | | | <i>Medford Area</i> | 84 | | | |
| <i>Eugene</i> | 201 | | | | <i>Eugene</i> | 0 | | | |
| <i>Portland</i> | 114 | | | | <i>Portland</i> | 0 | | | |
| <i>Other Areas</i> | 98 | | | | <i>Other Areas</i> | 0 | | | |
| Activities (% Total participants) | | | | | Activities (% Total participants) | | | | |
| <i>View/Download</i> | 13% | | | | <i>View/Download</i> | 100% | | | |
| <i>Project Details</i> | | | | | <i>Project Details</i> | | | | |
| <i>Review Proposals</i> | 65% | | | | <i>Review Proposals</i> | 100% | | | |
| <i>Discussion about the Park</i> | 25% | | | | <i>Discussion about the Park</i> | 100% | | | |
| Kit-of-parts activity | #1 | #2 | #3 | Total | Kit-of-parts activity | #1 | #2 | #3 | Total |
| <i>Play Area</i> | 46 | 90 | 58 | 194 | <i>Play Area</i> | 7 | 3 | 4 | 14 |
| <i>Shelter</i> | 52 | 88 | 48 | 188 | <i>Shelter</i> | 4 | 8 | 2 | 14 |
| <i>Athletic</i> | 68 | 94 | 26 | 188 | <i>Athletic</i> | 8 | 4 | 2 | 14 |
| <i>Courts</i> | | | | | <i>Courts</i> | | | | |
| <i>Aquatic Center</i> | 54 | 76 | 54 | 184 | <i>Aquatic Center</i> | 7 | 4 | 3 | 14 |
| <i>Dog Park</i> | 86 | 58 | 38 | 182 | <i>Dog Park</i> | 4 | 8 | 2 | 14 |
| <i>Restrooms</i> | 52 | 60 | 72 | 184 | <i>Restrooms</i> | 3 | 4 | 7 | 14 |
| <i>Parking Lots</i> | 34 | 72 | 76 | 182 | <i>Parking Lots</i> | 4 | 2 | 8 | 14 |
| <i>Flexible</i> | 60 | 50 | 78 | 188 | <i>Flexible</i> | 7 | 2 | 5 | 14 |
| <i>Lawn Space</i> | | | | | <i>Lawn Space</i> | | | | |
| <i>Paths</i> | 58 | 86 | 48 | 192 | <i>Paths</i> | 8 | 4 | 2 | 14 |
| <i>Splash Pad</i> | 56 | 62 | 66 | 184 | <i>Splash Pad</i> | 2 | 6 | 6 | 14 |

**Figure 7** Results of the kit-of-parts web survey (image courtesy of the author).

5.2. Digital participation should be “full”

“Full” participation indicates a process in which the individual member of a decision-making body has equal power to determine the outcome of decisions (Pateman, 1972, cited in [Cammaerts and Carpentier 2005](#) p. 8). Having an accurate

representative sample of the values and opinions of a community of residents is important. The email lists, blogs, and bulletin boards used by CDP were well-suited to gain access to real and virtual communities; however, these communities might not represent the diversity of opinions, ages, and socioeconomic status in the city. Similar to

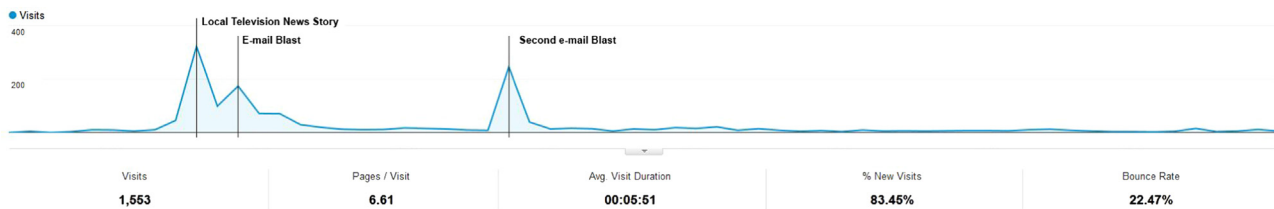


Figure 8 Diagram of web traffic and spikes in participation (image courtesy of the author).

traditional workshops, web-based methods frequently rely on self-selection and convenience sampling, which involve the risk of excluding large sectors of the population.

Demographic data can be used *post-facto* to stratify or weigh data to avoid biased results and represent the views of all types of residents. In the Hawthorne Park master planning process, the client decided not to collect demographic data to ensure the confidentiality of online participants. Bloggers identified themselves only by their first name, whereas their email address was only required for responses to specific questions and concerns. The inability to engage single-visit users in an extended dialog was a critical flaw in using this digital platform. Moreover, the lack of geographic filter made it possible for people outside of Medford to contribute their views. This feature was deliberately introduced to include former residents, extended family members with ties to the city, and visitors to counter potentially dangerous “not-in-my-backyard” attitude. However, allowing access to users from outside of Medford might have given equal weight to the opinions of non-residents without the responsibility that comes from supervising one’s own community.

5.3. Participation can be nuanced and gradual

Data from both the face-to-face and web-based processes raised questions about the quantity and quality of participation with web-based technologies. In face-to-face processes, participants are more likely to be “plugged in” to a process because social norms and healthy peer pressure may compel them to remain engaged. These informal social norms do not apply to a web-based environment, where anonymity, physical detachment, and isolation from the community may favor a “plug in/plug out” participation achievable with the simple push of a button.

The Hawthorne Park community process illustrated such on-demand participation, with digital users engaged for an average of 5 min and 51 s versus the several hours dedicated to the process by workshop participants. On the basis of the web traffic of CDP and the isolated spikes in participation that corresponded to email blasts and reminders (Figure 8), one could conclude that new technologies did not support a truly meaningful, iterative, and protracted participation. Only 14.5% of those who visited CDP did so more than once, whereas 40% of those who attended public meetings did so more than twice. Moreover, digital participation can be selective, as demonstrated by the inconsistency in the use of various components of CDP. Users who reviewed and voted on design features outnumbered those who accessed the “background” and “discussion” sections by a ratio of 5:3. This situation might have affected the reliability of the

kit-of-parts and bulletin board findings, and allowed people to vote without a nuanced and detailed understanding of the issues. Knowing the amount of time each user is willing to spend making decisions about their neighborhoods is an indicator of social capital strength, and the Medford process may serve as a benchmark to gauge the success and failure of future digital applications for community design.

5.4. Digital communities must be able to “hit the streets”

Compared with traditional workshop settings, the CDP web interface expanded opportunities for bridging social capital construction. Digital technologies allow those who will not normally participate to have their voices heard and social agency renewed. Nevertheless, any connection among citizens immediately dissipated after the project was presented to city council and the CDP platform was retired. The anonymity and confidentiality of the virtual environment provided by CDP prevented the emergence of “reciprocity” because confidentiality limited the possibility of off-line interactions. This challenge is one of the most difficult to overcome in web-based technologies.

The Hawthorne Park story demonstrates the potential of web-based technologies in facilitating citizen engagement for the common good. Although the percentage of Medford residents who participated online was significantly higher than the face-to-face attendance, technologies could not fully replace the socialization that would occur in the public realm. The Hawthorne Park case study illustrates that web technologies are most effective when they complement social capital construction that occurs in the public realm (Mesch and Talmud, 2010). Ultimately, the best forms of social capital construction emerge through the interplay between web and real-life interactions.

5.5. Requirement for continuous experimentation and improvement

Future efforts can improve success if the process is accompanied by an evaluative framework to collect data on indicators: time spent on the interface, intensity of participation, and “depth” of social networks involved, which will help designers change processes, techniques, and goals.

Efforts may also incorporate user preference surveys that identify types of programmatic elements to be included, rather than how these elements are laid out in the project, to provide users with an opportunity to identify community needs effectively. New technology allows online users to participate in design charrettes using game pieces and a

user-friendly interface. [Streetmix \(2015\) \(www.streetmix.com\)](http://www.streetmix.com) is an excellent example of an online charrette process that offers insight into what may be transferred into traditional community design projects. Finally, incorporating a sequence into the overall CDP interface will have required users to engage equally in all three parts of the process. This approach will provide an overview of the project to the user prior to receiving input. Although a longer process may discourage some users from completing the activity, it will enhance the quality of participation through project education and orientation.

The collected data suggest that integrating new technologies positively influences the community design process of Hawthorne Park. Only minor criticisms were recorded during or after the project. The CDP interface provided easy access to information about the project and enhanced influence on design decisions. From the perspective of the client, the increase in the number of participants that resulted from using the interface strengthened their arguments. From the point of view of the practitioner, the tool was considered successful because the project was completed on time. Moreover, the client and the public were both satisfied.

6. Conclusions

Grounded in professional practice, this project required making decisions that might have worked against the theoretical rules of participation and social capital in some cases. Considering budget limitations and clients demanding fast results, the design team was unable to let the process unfold, iterate, and evolve naturally. Deadlines and milestones agreed upon in the RFP proved difficult to achieve and affected the quality and extent of participation. A strict time frame prevented the completion of the project. Economic troubles caused the project to be put on indefinite hold and affected the chances of a much-needed post-occupancy evaluation. Such an evaluation would have been an invaluable resource for understanding the effects of new technologies on the quality of the social networks of residents, their sense of trust in neighbors, and their ability to spark new discourses through social agency.

Despite its limitations, this case study highlights the important influence of technology on participation. Digital technologies can help engage a high percentage of the population; however, the “local” scale and the types of interactions that can only occur in face-to-face, workshop-type activities should not be undermined. These technologies can enhance social capital and community life by helping designers reach larger sections of communities and engaging in intimate and constructive dialogs on deeply held values and meanings that residents associate with the physical environment. The story of Hawthorne Park offers a glimpse into an uncharted territory, wherein technology acts as a catalyst for new forms of citizenship and social capital construction. This case study sheds light on the potentials and shortcomings of using new technologies in matters related to social capital and identity construction, which have become crucial topics in cities that are becoming increasingly global.

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