Article

Augmented deliberation: Merging physical and virtual interaction to engage communities in urban planning

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Abstract
The goal of this article is two-fold: to introduce the concept of augmented deliberation and to demonstrate its implementation in a pilot project. We look specifically at a project called Hub2. This community engagement project employed the online virtual world Second Life to augment community deliberation in the planning of a neighborhood park in Boston, Massachusetts. The local community was invited to gather in a physical space and a virtual space simultaneously, and a physical moderator and virtual designer orchestrated deliberation. This project demonstrates the design values central to augmented deliberation: (1) it is a multimedia group communication process which balances the specific affordances of digital technologies with the established qualities of face-to-face group deliberation; (2) it emphasizes the power of experience; and (3) it promotes sustainability and reproducibility through digital tracking. Augmented deliberation, when properly designed, provides a powerful mechanism to enable productive and meaningful public deliberation. The article concludes with directions for further research.

Key words
augmented reality, Boston, community, deliberation, game, location, Second Life, urban planning, urbanism, virtual reality

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Introduction

Deliberative conversation is 'the soul of democracy' (Kim et al., 1999: 362), as it promotes informed public debate and ideally enables participants to arrive at the best possible answers. But integrating substantive discussion into everyday civic life is no easy feat (Ryfe, 2005; Wright and Street, 2007). Academics and activists have long experimented with designing conversation into a wide variety of political contexts (Mendelberg, 2002; Ryfe, 2002; Delli-Carpini et al., 2004), from educating people on current issues (Gastil and Dillard, 1999; Ryfe, 2002), to gathering public input on policy (Fishkin, 1996), and engaging people in decision making about urban planning and design (Forester, 1999).

Along these lines, there has been considerable effort devoted to the design and implementation of deliberative conversations in face-to-face settings (i.e. neighborhood gatherings or town hall meetings), and recently, many scholars have turned their attention to how deliberation can take place in entirely digital settings (Kavanaugh et al., 2005; Price et al., 2002; Dahlberg, 2001; Wodak and Wright, 2007). Digital networks can overcome challenges of scale and access, and social software platforms, such as Facebook, YouTube, and Wikipedia, can harness the immense energy of those distributed networks towards sharing, collaboration, and collective action (Benkler, 2006; Sunstein, 2006; Shirky, 2008). But social web media, while designed to be social, are not necessarily designed to be deliberative. Deliberation requires a give and take, a mutual exchange, a social construction of knowledge (Gastil, 2008) that is possible, but quite difficult to achieve in a digital context. It is rather easy for software to manage social transactions, but it is much more difficult for software to provide the flexibility and nuance required for deliberation.

In fact, early studies of online political discussion point to behaviors that undermine deliberation, including excessive use of flaming language and polarization (Davis, 1999; Wilhelm, 2000). But, as noted by Wright and Street (2007), these studies examine unmoderated discussions which did not require participant identification. Later research demonstrates that when online deliberation includes moderation and participant identification they are successful in achieving deliberative ideals such as respect, argumentation, and mutual understanding (Dahlberg, 2001; Janssen and Kies, 2005). And yet even carefully designed deliberation that exhibited reciprocal exchange of ideas and commitment to the process, may fall short of deliberation in key criteria such as the weighing of alternatives before arriving at a conclusion (Stanley et al., 2004). The simple lesson here is that design matters, and each unique context requires a unique solution for creating effective deliberative situations (Delli-Carpini et al., 2004; McAfee, 2004; Ryfe, 2005; Wright and Street, 2007).

Of particular interest is urban planning. This issue context poses a unique design challenge for deliberation – the challenge of visualizing space. Efforts to engage citizens in the planning of urban space (Healey, 1996; Forester, 1999; Rinner et al., 2008) have shown limited success, largely because of the barriers lay participants confront in understanding abstract spatial concepts (Barndt, 1998). In this article, we look at the context of urban planning and examine how deliberation can be enhanced through the appropriate application of digital tools into social situations. We call this augmented deliberation. We

seek to understand how good design of physical group deliberation can be informed, enhanced and complimented by a digital overlay.

The goal of this article is two-fold: to introduce the concept of augmented deliberation and to describe its implementation in a pilot project. We will look specifically at a project called Hub2. This community engagement project employed the online virtual world *Second Life* to augment community deliberation in the planning of a neighborhood park in Boston, Massachusetts. The local community was invited to gather in a physical space and a virtual space simultaneously, and a physical moderator and virtual designer orchestrated deliberation. The article begins with an overview of deliberative theory. We continue with a discussion of the context of urban planning and the unique challenges it poses for deliberation. We then introduce the concept of augmented deliberation as a solution. Our underlying argument is that the correlation of digital network interaction and face-to-face talk offers innovative designs that should be central to the way we consider public deliberation, in particular in the public planning of urban space. The application component of the article examines the Hub2 project and provides preliminary evidence of the effectiveness of augmented deliberation in practice. We conclude with directions for future research.

Public deliberation and democracy

Deliberation, broadly defined, is a political process through which a group of people carefully examines a problem and arrives at a well-reasoned solution after a period of inclusive, respectful consideration of diverse points of view (Burkhalter et al., 2002; Gastil, 2008). Theoretical and empirical work has shown that deliberation can promote an informed citizenry, because it can enable citizens to deeply engage with issues, share information and weigh alternatives, all of which are necessary for constructing an informed public opinion that affects public policy (Fishkin, 1996; Gastil, 2000). On complex issues where options are not apparent and a solution needs to be created, public deliberation is regarded as a political process that produces better answers, since it helps develop solutions that account for conflicting values and interests (Mathews, 1994). Deliberation can also serve a legitimating function once policy is implemented, because the ability to demonstrate the consideration of alternative views and rationales helps to justify a decision among those opposing it (Manin, 1987). But the demonstrated positive effects do not end with the temporally bracketed 'conversation'. The initial effects on political knowledge, political interest, and political efficacy brought about by deliberation can work to empower people towards political action (Almond and Verba, 1963; Abramson, 1983; McLeod et al., 1999; McClurg, 2006). Therefore, deliberation is regarded both as political engagement in itself as well as an instigator for further engagement.

In recent years, considerable research has been devoted to identifying the qualities that constitute deliberative discussions noting metrics such as argument quality (Min, 2007; Stromer-Galley, 2003), opinion diversity (Stromer-Galley, 2003, 2007; Albrecht, 2006; Min, 2007), representativeness (Albrecht, 2006), reflexivity (Dahlberg, 2001), knowledge gains (Min, 2007), and civility (Benson, 1996; Hill and Hughes, 1998; Papacharissi, 2004). While this work is instructive for evaluating instances of deliberation

and separating it from other forms of talk, our interest in identifying the nature of the platforms in which deliberation is possible requires a broader context. As such, we build heavily on John Gastil's (2008) definition of deliberation because it provides a productive framework from which to think about design.

Gastil argues that effective deliberation entails the simultaneous occurrence of two processes: the *analytic process*, or the substance of the exchange as it pertains to the issue, and the *social process*, or norms of conversation as they are reflected in the group interaction and group dynamic (Gastil, 2008). Gastil underscores the importance of *both* Jürgen Habermas' notion of an 'ideal speech situation' *and* Benjamin Barber's understanding of talk and conversation (Habermas, 1989; Barber, 2003). Habermas emphasizes the rigorous rational analysis of an issue as necessary for pursuing enlightened understanding, and Barber stresses the equal importance of an open-ended conversation that is 'as much about mutual discovery as problem solving' (Gastil, 2008). Gastil explains that the Barberic notion of talk does not refer to the cold exchange and aggregation of individuals' predefined interests, but rather to a 'complex mix of imagining, wondering aloud, listening, and understanding' (2008: 19). This pragmatic approach provides a fairly realistic depiction of the process by which people develop mutual understanding and agreement through public discussions. Gastil's definition is appealing also because it is flexible and therefore applicable to a variety of communication contexts.

The *analytic process* begins with the creation of a solid information base intended to ensure that participants understand the nature of the problem at hand. Participants prioritize key values, and then identify a broad range of solutions and weigh their pros, cons, and trade-offs (Gastil, 2008). When deliberation takes place within a decision-making body, the final component is the group's decision. An effective deliberative discussion, Gastil argues, should yield the best decision possible under the given circumstances (2008).

The *social process* of a deliberative discussion refers to the norms of communication underlying the conversation. These norms may result from mechanisms designed into a deliberative framework, but they are meant to unfold organically. First, all participants should be given an equal opportunity to speak. They speak in a plain manner, which enables others to comprehend and ask for clarifications when needed. And they consider each others' ideas and show respect to all participants. Here, too, the specific breakdown draws on both the Habermasian and Barberic concepts of talk. Equal access, comprehension, and consideration of others' ideas are analytic virtues because they promote the breadth and depth of the group's understanding of the matter at hand. But these values also speak 'directly to Barber's interest in mutual respect and the consideration of "the other" as a whole person – more than just a source of ideas and information' (Gastil, 2008: 19–20).

Of course, this is an idealistic conceptualization of the way groups behave in deliberative situations. Gastil acknowledges this, calling it a yardstick with which to measure deliberation. We understand the yardstick as a design challenge – one that can be approached through a creative combination of media and spatial organization.

The context of urban planning

The context of urban planning poses unique challenges for deliberation. Just as with other policy areas, the recognition of conflicting interests is critical for a community to build understanding and trust and to arrive at solutions that respond to a variety of needs

and interests (Gutmann and Thompson, 1996). But, with urban planning an additional challenge arises. Deliberators need to be able to understand and visualize non-existent urban spaces. In this context, not only do participants need to scrutinize the underlying values and needs of a community. They need to translate abstract ideas about physical space into specific recommendations.

Early efforts to involve the public in urban decision-making have focused primarily on the responsibility of agencies to inform citizens of agency action and gather public input and some consultation on the decisions of professionals (Godschalk and Mills, 1966; Arnstein, 1969; Burke, 1979; Brody et al., 2003). In recent years, planning scholars and practitioners have begun to incorporate deliberative methods into their work (Clavel, 1986; Krumholz and Clavel, 1994; Forester, 1999; Rixon and Burn, 2008). Some planners have sought out new technologies to aid them in this process. Most notably, there is a growing interest in using geographical information systems (GIS) to engage the public. While in many cases, these data-rich maps are used simply to display information, there are examples of *public participation GIS (PPGIS)*, where participants are invited to provide feedback by annotating maps (Harris and Weiner, 1996). PPGIS has taken multiple forms, including asynchronous activities available to the public in their homes or offices, and synchronous activities used as part of a physical planning meeting. Perhaps the most well known is the *argumentation map*, first introduced by Claus Rinner (2001). Here participants provide arguments about specific locations by altering a collaborative map, and the annotations become the basis of localized discussion (Rinner et al., 2008). Although the argumentation map provides a context for discussion, critics have pointed out that participants are not always comfortable with the technology, and the documented annotations are often uninformed. Barndt suggests that involving non-professionals in mapping is shortsighted, because it often excludes the role of the professional. Input from professional planners is needed, he contends, to counteract the enthusiasm of lay participation and to assist with analysis (1998).

In sum, these practices provide at most a limited deliberative setting. Individuals engage with the material collaboratively, but they are not given the benefit of understanding what is critical for the deliberation process. As a result, none of these efforts has successfully addressed the challenge of envisioning space. Even when parties are committed to a deliberative planning process, the use of visual plans – whether maps or renderings – impedes effective engagement. Professional designers, planners and architects are trained to visualize space. Lay people are not. Architectural sketches, planning scenarios, plotted maps, and even 3D 'fly-throughs' are not intuitive to the untrained eye, and when presented on their own, they may be alienating (Levy, 1995). Consequently, the rational process needed for deliberation is limited because the challenge of envisioning space mitigates the ability of people to comprehend given options, and to translate those options to appropriate physical representations. Similarly, the social process needed for a deliberative conversation is also limited. Ensuring mutual comprehension and considering others' ideas and experiences are again constrained by participants' limited capacity to visualize verbally stated ideas, or even ideas represented in maps and 2D illustrations. Translating ideas into easily comprehensible visual representations is key to effective deliberation about urban planning. It enables the participants to fully appreciate the context and better understand each other's thoughts about the issue. While careful listening is an ongoing challenge in any communication setting, the need to visualize space and understand urban processes makes listening and comprehension that much more challenging.

Augmented deliberation

We introduce *augmented deliberation* as a possible design solution that addresses uniquely difficult contexts where deliberation is complicated by external factors. We focus here on the visualization challenge embedded in urban planning issues. But augmented deliberation may uniquely address other critical challenges, including language barriers, power differentials, and challenges with communicating professional discourses. Augmented deliberation is the process whereby a group of people deliberates in a face-to-face setting while they are simultaneously immersed in a virtual environment. The process is based on three design values, which we explicate below. These design values are particularly relevant in the context of urban planning.

Design value 1: Augmented deliberation is a multimedia group communication process which balances the affordances of digital technologies with the established qualities of face-to-face group discussion

Augmented deliberation is not intended to replace the physical gathering of people. Instead, it seeks to *enhance* public deliberation processes by layering participants' experience with appropriate technologies. Augmented deliberation combines into one communication context both the affordances of digital technologies and the benefits of physical presence. For example, in the case of a community meeting about urban planning, public deliberation could be augmented with a virtual world to enable lay participants to understand the nuances of physical design by allowing them to experiment with various options as they meet (Gordon and Koo, 2008). Or in the case of a public discussion about Boston University's proposed hazardous biolab, participants could play a game with their mobile phones that enables them to gather information, assume different roles, and form alliances (Rosenbaum et al., 2006). In each of these cases, the technology was implemented in a physical context to enable a more robust engagement with varied perspectives as well as to provide an inroad to complex professional discourse.

Design value 2: Augmented deliberation emphasizes the power of experience

It emphasizes both personal experience and the group experience as integral components of effective deliberation. By employing multiple media streams into the deliberation context – i.e. text-messages, virtual exploration, social news feeds, and more, augmented deliberation enables a deeper inclusion of experience into the context of group deliberation than ordinary face-to-face community meetings. In this situation, deliberators not only talk about the issue and share related personal experiences, but they *experience the nature of the issue together* while they share, construct, and play as a means of engagement.

The emphasis on experience helps both the rational and the social process of deliberation. It deepens participants' understanding of issues by building on the collaborative production of shared experience. Deliberators are able to create a solid information base, reflect on their values and understand how they translate into a range of solutions. But individual experience is deeply social as well. It enables a different level of engagement as each of the participants is individually experiencing something together. One of the goals of

augmented deliberation is to build off of this group experience to enable individuals to articulate their values as they apply them to the specific issue.

Further, sharing experience is a powerful mechanism for bonding the group, creating group identity, and helping create an environment of understanding and mutual respect (Ryfe, 2006; Gordon and Koo, 2008). As group identity takes shape, participants are likely to strengthen their commitment to the process and increase their motivation for further engagement in the issue and in the community (Bers and Chau, 2006). Games, virtual environments, shared networks, backchannels: all of these platforms, when incorporated into an existing physical environment, can strengthen the group cohesion and simultaneously focus the group towards particular outcomes (Squire et al., 2003; Rosenbaum et al., 2006; Gordon and Bogen, 2009).

Design value 3: Augmented deliberation promotes sustainability and reproducibility through digital tracking

Digital technology provides the structures to connect the temporary deliberation experience with the broader community process, thereby making the outcomes of deliberation more apparent and meaningful. By documenting deliberation through digital means, the artifact of the process can be made available to deliberators, policy makers and the broader public (Jankowski et al., 1997). This may help sustain deliberation in two ways: first, the availability of a digital trace helps participants re-enter the conversation and seize the outcome to further advance the political process; and second, the artifact generated by deliberators provides a documented public voice that is transmittable to policy makers, thereby offering an effective route for actual impact on policy. Augmented deliberation refers to both the live experience of group conversation and its evidentiary traces. While any online discussion leaves a trace, what is unique about augmented deliberation is that the trace is evidence of time, space and context just as much as it is evidence of content.

Augmented deliberation can incorporate a variety of digital mechanisms – including web platforms, mobile devices, or game spaces – and may be effective for many issue contexts. In this study we demonstrate how augmented deliberation can mitigate barriers to engagement posed by urban planning.

Augmented deliberation in practice

Hub2 was a pilot project in Boston, Massachusetts, which employed the virtual world *Second Life* as a means of engaging residents in the planning of a neighborhood park. *Second Life* was chosen as the primary platform for the project because it was inexpensive to set up, it was free for users, and it had become fairly well established as a platform for virtual group interaction and training across a number of disciplines (Noveck, 2006; Nederveen, 2007; Devisch, 2008; Nesson and Nesson, 2008). While there was no precedent for using *Second Life* for the specific purposes of augmented deliberation, there was ample evidence to support its effectiveness as a platform for real-time group interaction. Hub2 was supported by the City of Boston, the Boston Redevelopment Authority (BRA) and the Allston Development Group (ADG) of Harvard University, and took place from June to August of 2008. The project consisted of formal in-person workshops,

Figure 1. Group gathered at a Hub2 workshop with the Second Life space in the foreground

where groups of participants immersed themselves in a virtual space, moved things around, proposed ideas, role played, and experienced various spatial configurations. It also included informal drop-in hours, where community members individually experienced the design and contributed their ideas in the online conversation about the park. The project was designed as a supplement to traditional community meetings that were facilitated at the same time by ADG.

The core of the Hub2 project was the in-person workshop. In each 90-minute session, up to 15 participants gathered in the local community center and sat around tables configured in a V pattern. Participants sat in front of laptops with the *Second Life* application running. While *Second Life* is an expansive three-dimensional environment wherein tens of thousands of users occupy spaces, play games and build, Hub2 participants saw only a small piece of this environment – a place called Boston Island. The island included a 3D model of the park space, complete with the surrounding buildings and structures. Each participant was given an *avatar* – a digital character that they could move around the space. As participants inhabited the space, they would see the back of their avatar's head as well as the avatars of all other participants. In this virtual group setting, they were invited in to explore the park space (Figure 1).

Each workshop began with 10 minutes of free exploration time, where participants were asked to walk through the space and to identify priorities. Participants would then

verbalize these priorities, making statements such as 'These paths need to be accessible,' or 'There needs to be sufficient foliage to act as a buffer between the picnic area and the abutters.' Rough approximations of these ideas were immediately 'rendered' in *Second Life* by a professional designer and handed over to the participants to place, size and shape. Every idea from the participants was transformed into a virtual object and placed in the environment for the group to consider. In some cases these objects sparked verbal conversation, while in others participants would just sit on a new bench, or play on a new sculpture. This virtual play or exploration often took the place of verbal discussion – providing participants a means of communicating *about* the space by *moving and acting within it*. This involved role-play.

Participants were given a particular 'skin' for their avatar – an old man in a wheelchair, a small child, a woman and a dog – and they were asked to act out certain scenarios, such as walking to the library from the picnic area or parking their car and entering the garden. Once completed, participants would have the opportunity to verbalize reactions and suggest physical changes. The last 20 minutes of each 90-minute workshop was devoted to individual commentary. Participants could walk through the space to leave comments and plant virtual flags in the ground by an object or area of interest. They could then vote on the flagged spaces. Flags would turn shades of red or green depending on the number of likes or dislikes. Players could also comment within flags, adding specific notes to given areas. Comments could be read by all and were saved as part of the 'virtual sketch' of the overall session. Each virtual sketch was saved and made available to the larger community, including architects, planners, and developers.

In addition to the workshops, residents were invited to drop by during designated hours to see and inhabit the virtual sketches that emerged from the workshops. The drop-in hours were an important part of the overall process, but they did not, in and of themselves, reflect the design considerations of augmented deliberation. They were individualized sessions with the overall effect of recruiting more people, keeping the project in the sightlines of the community, and providing a space for those without convenient access to a networked computer to 'see what was going on'.

Altogether, Hub2 facilitated eight workshops, with a total of 120 people participating, about half of whom were under 25 years old. Throughout the 3 months of the project, drop-in hours took place Monday through Friday from 3 to 5 in the afternoon and on Saturdays from noon to 3. Approximately 75 people attended these informal sessions, some of whom returned to participate in one of the formal workshops. To help facilitate the meetings, four 'youth interpreters' were hired. These internet-savvy local youth served a dual purpose: 'technology experts' who aided participants with the computers, and viral advertisements who attracted young participants to the process. The latter purpose was clearly effective, as Hub2 workshops attracted more than 60 participants aged 14–25, compared to zero in this age range in the traditional meetings which occurred in the same time frame.

Research design

Our study combined participant observations of all Hub2 workshops ($n = 8$) and drop-in sessions ($n = 60$), and unstructured interviews ($n = 18$). Interviewees included community members ($n = 11$), youth interpreters ($n = 3$), project architects ($n = 3$), and a project planner.

Participant observation

Two people observed each workshop focusing on the effects of the three design values on the deliberation process. Specifically, observers noted participants' involvement in the workshop – what they did with their avatars and how they negotiated between the virtual interactions in *Second Life* and the face-to-face interactions within the physical room. Since the presence of technology in the workshops was overwhelming to some participants, we opted not to videotape the sessions – a standard practice in participant observation (Brun-Cottan and Wall, 1995). Having people in the room with notepads seemed the least intrusive mechanism for observation.

Analysis of the observations was an ongoing process that occurred during weekly meetings throughout the 3-month project. At these meetings, observers and team members analyzed the notes, identified common themes and patterns, and noted differences between workshops. The result was a rather thorough understanding of the 'feel' of the room – what people were looking at, what made them laugh or appear frustrated, and the ways and extent to which interactions on the computer overlapped or complemented face-to-face interactions.

Interviews

This method has proven useful for assessing how people feel about particular situations and systems (Anderson, 1997; Simonsen and Kensing, 1997; Brady, 2004). We considered it to be most appropriate for learning about participants' experience in the augmented deliberation context. Interviewees were recruited immediately following each workshop. Of 50 interested participants, 18 hour-long interviews were successfully arranged. In most cases the initial enthusiasm inspired by the workshops was challenged by busy schedules. Interviews were conducted and digitally recorded in person or via telephone. To allow for open-ended responses, the interviewer would begin by asking how they became involved in the workshop, and whether it was useful or meaningful. These questions often led interviewees to recall their experience in the traditional process and how it compared with Hub2 workshops. A rigorous data analysis took place after the conclusion of the project. While we did not transcribe all the interviews, we listened to them for overall tone, salient points and recommendations. The notes taken from the interviews formed the basis of our analysis.

Analysis

This analysis walks through the three design values of augmented deliberation to evaluate the effectiveness of Hub2 at realizing and facilitating augmented deliberation. We discuss how the Hub2 process adhered to each of the design values, and we provide empirical evidence to evaluate the extent to which the project yielded the expected outcomes.
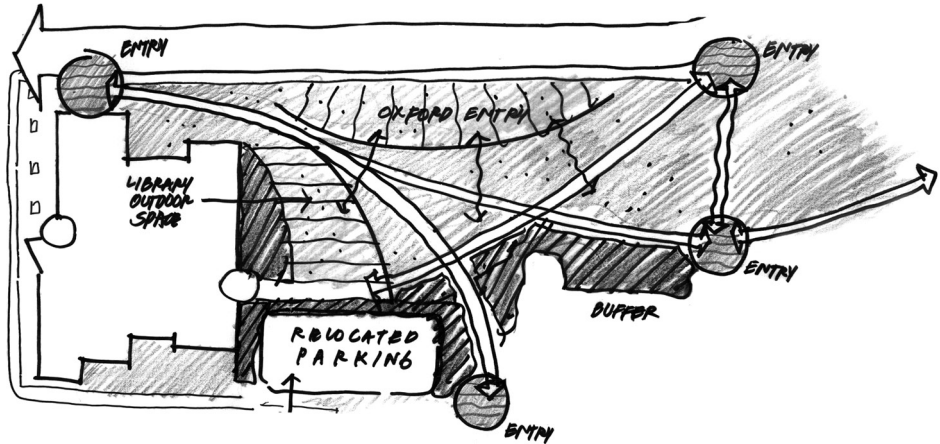
Figure 2. Architect's sketch of a proposed design

Design value 1: To establish a multimedia group communication process that balances the affordances of digital technologies with the qualities of face-to-face group discussion

We were able to produce a realistic and accurate depiction of the proposed space in *Second Life*, which provided participants with the necessary tools to properly imagine and understand the layout of the park. *Second Life* served as a more comprehensible mechanism for representing spatial abstractions than the 2-D sketches that city planners ordinarily use. To illustrate, consider the architect's rendering of paths and flows above (Figure 2), which is meant to represent the correlation of entrances (circles), walking paths (lines) and public gathering spaces (blocks). This rendering ended up provoking more questions than answers. But when that same image was reproduced in *Second Life* (Figure 3), relation (distances between entrances) and context (correspondence to street, buildings and sidewalks) became evident.

In the workshops, participants had the opportunity to walk down the paths proposed by the architects. They focused their attention on their screens and moved their avatars from one side of the park to the other. Typically, there would be about five minutes of silent navigation of the space before someone would make a verbal comment about the inconvenience of a path or the desire for more trees or foliage. Verbal discussion would often overlay navigation of the space, with participants 'talking while moving'. We found that participants became comfortable and even playful after the initial period of focused engagement. Avatars would stray from the path, exploring other elements, and participants were more likely to propose unsolicited ideas about the design of the park. This free movement or playfulness is a product of feeling comfortable with one's comprehension of a space. Many interviewees reported that the process felt more like a friendly discussion than the typical community meeting. One participant explained that

Figure 3. Architect's sketch rendered in *Second Life*

'the conversation seemed to flow. When I had a complaint about some part of the design, I simply walked my avatar over to the area in question. Everybody could see what I was talking about.' One of the developers said: 'Being able to be with everybody in the room – this is powerful. Being able to be with them and talk with them in a group setting was truly a participatory piece.' The workshop participants and some of the planning professionals were generally motivated by the intersection of the face-to-face dialogue and immersive technology. While some said that the technology added confusion to the meeting, most felt that if there was confusion, it was short lived, and the technology helped them to express their opinions more clearly. '[With Hub2] conflict goes away,' said a participant. 'When someone wants something, I can understand what they're saying and help them visualize it. People were able to see the fruits of each other's feedback.'

Design value 2: To place emphasis on user experience

Second Life enabled participants to inhabit and manipulate the space, thereby integrating both individual and group experience with the physical layout of the park *during* the deliberation process. In many of the interviews participants noted that they felt as though they were actually present in the park. For example, one participant reported: 'I could really feel the space. At first, I didn't, but then I did. It felt like I was really in the park.' And another explained, 'It's easier in *Second Life* to visualize the space. If you want to look at the streets, you can go over to them. If you just want to get an idea of an area, you

can see a one-dimensional drawing, but if you want to immerse yourself, you use *Second Life*.' This reported feeling of immersion says more about participants' interaction with physical space than it does about their interaction with virtual space. Experimentation with virtual objects and spaces became, as described by Kelly Beckett and David Williamson Shaffer (2005), augmented *by* reality. 'As [participants] engage with a virtual simulation, their problem solving experiences are explicitly guided by real-world tools and practices.' Walking down a virtual street was informed by how one walked down a physical street. Participants brought the physical world into their virtual play. Their engagement with the virtual space was predicated by familiar experiences of physical spaces. The use of personal experience to inform deliberation was key to this process. One participant said: 'I felt like the avatar was really me.' In other words, the meeting felt more like a reflection on past and present experience of a space than an abstract projection of some imaginary future space.

Experience extended from the individual to the group through collaborative exploration and design. One of the affordances of *Second Life* is its ability to facilitate the co-presence of multiple avatars. The avatar as a navigational tool provided users with a point of identification that extended their sense of presence into the virtual environment and created a strong sense of being with others (Gregersen and Grodal, 2009). During the workshops participants watched how avatars occupied space, what they did or did not do in the space, and then built on those experiences to inform the discussion. This seemed to help participants reflect on shared values, their needs and desires and how they might be met in the design of their park. For example, in one workshop, participants raised the idea of adding a playful sculpture, and someone suggested a large climbable sculpture of a bookworm to fit the theme of a park behind a library. The designer immediately placed a possible version in the virtual rendering of the park, leading the group to jump and play on the sculpture. This experience helped deliberators notice various nuances that should be adjusted. Within 15 minutes participants seemed satisfied with the resulting design. The group experience helped promote an analytic process of deliberation by allowing for a Habermasian rigor in the analysis of the suggested design. At the same time, it reflected Barber's notion of an imaginative, creative public conversation (Barber, 2003). The bookworm sculpture became very popular, with each subsequent group requesting its addition to their park design. Architects and planners were also intrigued by the concept, introducing it in meetings with the developer and larger community groups. This became a symbol to the community of their power in the process. One participant said: 'If the park gets designed the way we want to, we get to say "I helped build this". How cool is that?'

But while the design of the process transmitted an empowering message, in practice planners were often not prepared to give the public so much power, nor were they convinced that public input was necessary or useful for the planning process. 'I like the idea of letting people in the space,' said one of the project's architects, 'but I am not sure I trust their opinions.' There was considerable fear expressed by the architects that giving the public the ability to imagine, experiment with, and experience the space would give them the false perception of being architects. 'If someone puts down a tree in *Second Life*, are they going to want it in real life?' One of the most challenging aspects of the project was helping stakeholders realize the potential of augmented public deliberation to contribute to the design process, and overcome the fear of unprofessional citizens 'taking over'.

Providing lay citizens with a process to deliberate about space does not give them the ultimate authority to build it; it offers a means for a more inclusive and public decision-making process. This method of clarifying intentions and expectations is important to the success of augmented deliberation.

Design value 3: To secure sustainability and reproducibility through digital tracking for the purpose of creating a deeper investment in the planning process

The Hub2 project was designed to effectively integrate discrete deliberation units – i.e., small group deliberations (the workshops), individual drop-in hours, and public official meetings – into a broad and inclusive community deliberation process. Specifically, Hub2 exploited the affordances of *Second Life* as a means of enabling groups of citizens to meaningfully deliberate among themselves. Furthermore, it exploited the digital tracking features to save the designs, and provided the time and space for follow-up discussions and input. Designs produced in individual workshops were saved and then shared with citizens in subsequent workshops, in the drop-in hours, and with city planners and designers in their meetings. This provided a sense of empowerment and purpose for the workshop participants, as they knew their work was being recorded; it also provided the continuity necessary for a genuine community process, by cultivating a sense of connection to the process for those unable to attend the workshops.

Interviewees reported that the process made them feel listened to. 'It gave me a chance to put my two-cents in,' said one participant. And another noted how he felt 'more listened to and comfortable … at Hub2 there was more democracy'. This was a recurring theme, one partly prompted by the dynamics of the room, but predominantly it was the result of participants' understanding that those dynamics were being recorded and shared with decision makers and others in the community. Effective deliberations, both online and offline, are those in which participants perceive impact beyond the actual setting (Ryfe, 2002; Janssen and Kies, 2005). In fact, one of the challenges of staging any public deliberative forum is convincing participants that their work is important and useful. The Hub2 process was designed to transmit a message of empowerment, by enabling lay citizens to provide substantive input into the planning process, and by creating a digital artifact that could be shared with stakeholders. Having verbal comments manifest themselves in a visual and seemingly tactile environment lent a sense of urgency to participation that ordinary deliberation contexts could not. That urgency was fuelled by the knowledge that the artifacts of participation would be preserved and shared with community members and public officials.

Participants felt that they were not just talking, they were engaging with stakeholders in a way previously not possible. They felt that the planners, architects, and public officials were genuinely interested in their engagement. According to one participant, 'At Hub2, I feel more engaged. Oh yes. At the [traditional meeting], they speak to the community, but you don't feel involved … and then when you speak, you don't even get an answer, you're just there to listen.' It was clear that participants felt more engaged and empowered by the notion that conversation was intended to be productive, not just palliative.

This was further evidenced in the drop-in hours. Those people who came to the drop-in hours (*n* = ~75) spent time walking through the virtual sketches composed at previous workshops. Even though they were not part of the initial deliberative context, they were brought into it in an asynchronous manner. They typically read the comments couched within the virtual flags and engaged in conversation with the youth interpreters about the meaning of specific objects. In some cases, they would attend a subsequent workshop to fully experience the process.

Discussion

This article introduces the concept of augmented deliberation, and demonstrates how it may promote effective public deliberation in the context of urban planning. *Augmented deliberation*, the process whereby groups deliberate in a face-to-face setting while simultaneously interacting with digital information, builds on the unique features of digital networks and virtual reality to create powerful deliberative contexts.

Data collected from the pilot study provide preliminary evidence that augmented deliberation mitigates common barriers to participation in the planning of urban space. Transforming plans and designs into inhabitable environments enhances the capacity of lay participants to comprehend space. This makes the public process less alienating, as personal experience becomes the common denominator through which participants organize their thoughts about proposed spaces. The Hub2 project demonstrated that unlike traditional modes of community processes that embrace a top-down approach, participants were able to deliberate about urban spaces and contribute powerful affirmative visions. Rather than relying on information from outside experts, they were able to create and share local experiences. Experiences of *the* park space, not *the idea of* the park space, were the instigators of conversation. Participants spoke about how they felt when immersed in a particular design rather than merely speculating about it. This fundamentally levels the playing field, bringing even those with no ability to comprehend maps or visualizations into a conversation about the complexities of planning a physical space. The virtual experience was complemented by a moderated face-to-face conversation in part to ensure that the personal nature of user experience consistently got applied to the larger social context. When participants looked up from their computers and engaged with the physically proximate group, deliberation shifted from Barberic play to Habermasian rationalization needed to interpret and filter the virtual experience.

The emphasis on user experience creates a deliberative context that combines the free flowing creative conversation described by Barber with the rigorous rational process emphasized by Habermas. The shared experience of seeing, 'touching', and playing with virtual spaces creates the foundation for Barber's idea of democratic talk, 'its creativity, its variety, its openness and flexibility, its inventiveness, its capacity for discovery…' (Barber, 2003: 174). At the same time the moderated verbal discussion enabled participants to layer a rational Habermasian discourse over the playful exploratory setting of the virtual space. Taken together, augmented deliberation enhances participants' ability to understand a space and confidently engage with its corresponding urban planning issues, thus encouraging the norms of conversation necessary for a deliberative social process.

But the focus on experience poses challenges as well. Hub2 made it apparent that while augmented deliberation can make lay participants feel empowered, professional designers and planners may not be prepared to yield much control to non-professionals. This attitude is not uncommon among urban planners (Barndt, 1998; Forester, 1999) and presents a very real barrier to the scalability of augmented deliberation. Future research can address this issue. Hub2 was structured primarily to assist the lay public in deliberating about complex planning issues. With only a few exceptions, public officials and city planners did not participate in the process. While the public was assured that the results of the process would be shared widely with stakeholders, the absence of architects and planners posed significant challenges. Future research may explore a more inclusive community process that involves professionals and public officials, along with lay participants. Research may also structure more detail into the virtual experience, such as descriptions of cost, and quality of life. Adding more substance to the virtual experience and ensuring the participation of professional planners and architects may help garner more authority on the part of lay participants and be less intimidating to professionals wary of empowering an uninformed public.

The design of Hub2 provided the foundation for ensuring equal access and mutual respect *within* the workshops. And the use of youth interpreters helped engage those participants, mostly older citizens, who were alienated by the technology. But there are still unanswered questions about recruitment and participation. Clearly, the design was successful in attracting young people into the process. But did it a priori discourage older, less tech-savvy neighborhood residents from getting involved? Future research needs to scrutinize questions of access and inclusivity to learn how augmented deliberation is perceived in the community at large.

Augmented deliberation also poses the issue of resources. Hub2 required significant financial, technical, and physical resources which may not be feasible for all communities at all times. The bulk of the expenses went to recruiting participants, in particular young people. Another major expense was design and technology. But these challenges, too, could be addressed. For example, collaboration with local organizations including community development corporations and youth programs could build on existing networks and budgets for effective recruitment. The technology expense could also be reduced with quality open-source platforms that can be repurposed in multiple communities.

The study of the Hub2 pilot was restricted by its expedited time frame and limited resources. The in-depth unstructured interviews were useful in gauging how people felt about their experience, and participant observation was an effective, unobtrusive method for identifying group dynamics within the deliberation process. But the self-selected interview sample and the lack of data for comparison limits the generalizability of the findings and our ability to determine causality. Future research should undertake an experimental design that could compare between augmented deliberation and traditional methods of gathering public input. Such experimental data would complement data gathered from interviews and participant observations, and increase the validity of the findings.

In conclusion, any public planning process that requires input about physical space can benefit from augmented deliberation. This research focused on one key challenge – the limitations among the untrained public to adequately understand abstract space.

But urban planning poses other challenges as well. Most notable is conflict negotiation. Planning issues often involve conflicting interests coupled with deep resentments and community divides. Building a new highway, for example, is seldom only a question of the highway's design, but the destiny of the land, the community, and individual residents. Augmented deliberation can help alleviate such challenges. One direction to explore is role-play and game quests. Research suggests that these features introduce productive limitations, because operating within a prescribed set of rules forces players to put aside pre-existing differences (Gee, 2003; Klopfer, 2008). In other words, adding the game layer as the structuring logic of the virtual augmentation may help put personal differences aside in favor of the character's particular issues. This may in turn enhance the mutual understanding necessary for a productive deliberative process.

Finally, this research focused on immediate effects. Our preliminary evidence suggests that augmented deliberation can facilitate informed participation in the planning of public space, and enhance citizens' sense of efficacy in a particular issue context. Further research is needed to examine both short and long term effects on civic engagement. How does augmented deliberation serve as an entry point for engagement? Can it provide the necessary incentive for individuals within a community to get involved and stay involved? And finally, how might such involvement affect systemic urban issues such as public safety and quality of schools? It is important to study not just how augmented deliberation affects people immediately, during and after the meetings, but how the process might inspire more sustainable and diverse participation in civic life.

Acknowledgments

Notes

1 This is important for ensuring understanding of the issue. A democratic problem solving process must account for participants' core values and their relation to policy specifics as it seeks to create policy that meets their needs and desires. For this reason, scholars have emphasized the importance of relating issue specifics to core values in promoting informed citizenry and public opinion (e.g. Zaller, 1992; Gutmann and Thompson, 1996; Entman and Herbst, 2001).

2 Participants were randomly assigned an avatar with the last name 'Bostonian'. Each avatar was named after a neighborhood in the city; i.e., Allston Bostonian, JP Bostonian, Northie Bostonian, Southie Bostonian, etc.

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