



# Urban Computing: Navigating Space and Context

*Irina Shklovski*, Carnegie Mellon University  
*Michele F. Chang*, ReD Associates

**As computing moves from the personal desktop into the world around us, the problems of design and usability go beyond technical considerations to contend with preexisting social structure and cultural norms associated with public spaces.**

**W**hile much computing research has been concerned with home or work, the focus has recently been shifting toward “third places”—the spaces between home and work.<sup>1</sup> These are complex spaces, as they are navigated both through physical movement and interpretations of social context.<sup>2</sup> As computing blunders into our personal worlds—annoying, interrupting, or distracting us<sup>3</sup>—it is potentially even more disruptive in public spaces, where friends and strangers alike navigate the complex social context of coexistence.<sup>4</sup>

While public space presents challenges to technology design, it also has the advantage of being more accessible than private spaces such as home or work, affording great potential for both observational studies and field testing of real world applications.

Sociological research illustrates that public spaces can be understood as combinations of “front spaces” for performative action<sup>5</sup> and spaces for semiprivate and private interactions. People inhabit these spaces even as they interpret their surroundings and gauge the mood of these spaces to increase their understanding of where they live.<sup>6</sup>

As much as public space brings with it a sense of egalitarianism where civic life is played out and embraced,<sup>7</sup> it also can be fraught with adversity and conflict. Both

these contingencies must be taken into account when considering the design of computing for public spaces.

This special issue focuses on the topic of urban computing because we feel it is important to consider public spaces as potential sites for the development of computing. The articles presented here point to issues of theoretical understanding of these spaces, as well as the technical feasibility of technology design and development.

We are not calling for technology designers to become urban planners and social scientists, but we do suggest that there is a wealth of research in these areas that needs to be taken into account when designing new technologies. Collaborations are crucial to understanding social life and creating technologies that can augment it in positive ways. We believe that research in urban computing can be useful for augmenting and extending existing theories in relevant fields and for greater blending of these fields to develop a coherent understanding of public social life.

The articles presented here were selected based not only on their ability to shed light on the field, but also for their collective impact—each offering a different perspective on public computing.

## IN THIS ISSUE

In “Imagining the City: The Cultural Dimensions of Urban Computing,” Amanda Williams and Paul Dourish

set the scene by considering current missteps in designing technologies for the city, reminding us that our endeavors, however well-meaning, continue to dangerously ignore the heterogeneity of cities and public spaces. Williams and Dourish consider the social context of urban life and explore issues of mobility within public spaces. They point out that understanding the aspects of public spaces that make them legible to the inhabitants is critical to understanding the diverse needs of their inhabitants.

In “Facilitating Social Networking in Inner-City Neighborhoods,” Marcus Foth explores the friends and strangers component of public spaces that Williams and Dourish touch upon, emphasizing sociality (friends and strangers) in public space. Foth investigates systems for local, geographically proximal communities where people are brought together simply by virtue of living in the same physical spaces. His research illustrates how existing systems misread the needs and desires of inhabitants of spaces such as apartment complexes. The article suggests that there is a need—indeed, a market—for collaborative systems, which will be difficult to provide if we rely on existing ideas about “communities.”

In contrast, Vassilis Kostakos, Eamonn O’Neill, and Alan Penn further explore the concept of legibility in “Designing Urban Pervasive Systems.” They examine relationships between architectural and interaction spaces and information spheres and consider how people interpret urban spaces as private, social, or public. Both of these articles propose usable analytical frameworks for designing and evaluating urban environments.

In “Public Pervasive Computing: Making the Invisible Visible,” Jesper Kjeldskov and Jeni Paay address a combination of sociality, mobility, and legibility issues as they describe lessons learned from testing an interactive prototype system for use in a public space. In documenting the successes and failures of their prototype system, they illustrate a productive application of architectural methods, social theory, ethnographic research, and iterative design as a way to achieve functional, usable, and useful systems.

One of Kjeldskov and Paay’s observations is that when people spend leisure time in a public space, they do not necessarily desire to meet everyone in that space. They are comfortable with the space being populated by strangers. This echoes Williams’ and Dourish’ discussion about conceptualizing public space as being full of either available dates or familiar strangers. Kjeldskov and Paay side firmly with the familiar strangers concept, calling this practice *socializing by proximity*—a concept woefully ignored by many “social technology” developers.

“Simulations for Urban Planning: Designing for Human Values” by Janet Davis and colleagues provides an overview of several lines of research that ultimately culminated in a successful urban development system. The authors summarize how researchers applied a com-

bination of conceptual, empirical, and technical investigations rooted in theoretical frameworks of public policy and political science. They describe a full-scale system that has been piloted and used to support public participation in developing policies in urban communities around the world.

**C**omputing in public contexts presents challenges to the design of technology. As a whole, the articles presented here create a snapshot of the problems associated with designing within the social complexities of public space while also attesting to the motivations behind such explorations. From the theoretical to the applied, it is clear that bringing technology into the public realm sits at the intersection of several fields and can only benefit from such focused inquiry. ■

---

## References

1. R. Oldenberg, *Celebrating the Third Place: Inspiring Stories about the “Great Good Places” at the Heart of Our Communities*, Marlowe & Company, 2002.
2. C.S. Fischer, *The Urban Experience*, Harcourt Brace Jovanovich, 1976.
3. D.C. McFarlane, “Interruption of People in Human-Computer Interaction,” *Dissertation Abstracts Int’l: Section B: The Sciences & Engineering*, vol. 60, no. 3-B, 1999, p. 1170.
4. W. Mitchell, *City of Bits: Space, Place, and the Infobahn*, MIT Press, 1995.
5. E. Goffman, *Behavior in Public Places*, The Free Press, 1963.
6. W. Whyte, *The Social Life of Small Urban Spaces*, Project for Public Spaces, 2001.
7. J. Jacobs, *The Death and Life of Great American Cities*, Vintage Books, 1992.

*Irina Shklovski is a doctoral student at the Human Computer Interaction Institute in the School of Computer Science at Carnegie Mellon University. Her research interests include social relationships, online communities, and technology as a mediator of social interaction. She received a BA in psychology and art history from the University of Southern California. She is an NSF graduate fellow and a member of the ACM. Contact her at irinas@acm.org.*

*Michele F. Chang is a senior consultant, ReD Associates, Copenhagen. Her research interests are convergence of mobile technologies in the public spaces and identity and trust in ubiquitous computing environments. She received an MPS from the Interactive Telecommunications Program at New York University’s Tisch School of the Arts. Contact her at mfc@redassociates.dk.*