Intelligent Urbanism: Convivial Living in Smart Cities

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Abstract

Technology has been hailed as a panacea for global and local challenges in urban development. This research note explores the role technology plays in facilitating intelligent urbanism and considers how Illich's notion of convivial living can inform urban development. Here, we present one case study on energy that is a work in progress. Two future cases will include transportation and food sourcing. The broader objective of this work is to develop a framework which those involved in the planning, design and deployment of technology in urban spaces can use to integrate conviviality into such environments. This note takes a step in this direction by describing the key elements which can promote convivial tools to facilitate convivial living.

Keywords: smart cities, conviviality, urban development, Ivan Illich, smart grid

"I propose the vision of a convivial society. A convivial society would be the result of social arrangements that guarantee for each member the most ample and free access to the tools of the community and limit this freedom only in favor of another member's equal freedom."

--Ivan Illich, Tools for Conviviality, 1973

Introduction

Technology has been hailed as a panacea for global and local challenges in urban development. The role of technology is evolving in the face of global challenges faced by cities such as population growth, migration and climate change (United Nations, 2012; Werz & Conley, 2012). This research note explores the relationship between technology and urban development by bringing Illich's notion of convivial living to this context. Convivial living describes an existence in society that enables a community to choose its own social arrangements. In such a community, individuals have the ability to live their lives in a way that would maximize the use of their creativity and imagination, simultaneously facilitating independence on the part of each person and fostering collaboration between members of society (Illich, 1973). This raises the following questions that we seek to address: (1) To what extent can technology in cities be designed and implemented in a way that facilitates convivial living?; (2) Who should build conviviality into urban spaces through technology?; (3) What role shall residents play in the design and governance of such technologies?

The broader objective is to develop a framework that has two purposes: (1) to examine the extent to which conviviality is present in empirical cases; and (2) to enable those involved in the planning, design and deployment of technology in urban spaces to integrate conviviality into such environments. In its preliminary form, the elements of the framework are theoretically informed by Illich's work.

The case study discussed here focuses on a smart grid demonstration project originally taking place in Austin and recently expanded to the Dallas-Fort Worth area in Texas. The additional case studies still under development examine the efforts to develop green transportation in San Francisco and urban farming rooftop initiatives in New York City.

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We will briefly define the key terms “intelligent urbanism” and “smart cities,” as they are central to our discussion. Sociologist Louis Wirth asserted that “urban” is not fully or accurately measured by the proportion of total population living in cities (1938). This is because the impact of cities as residential and commercial hubs has radiating social, political and economic effects upon areas outside of city boundaries that are not accounted for when the definition is limited by numbers alone. Accordingly, Wirth believes that urbanism is a way of life that is most often identified with living in a city, but could also be experienced in a non-city area. Thus, urbanism should be thought of as a mode of life that is not limited to the boundaries of the city. Wirth’s perspectives on urban and urbanism will be used within this discussion as it acknowledges that cities and their surrounding areas should be equally considered in examining how technology can be developed and implemented to facilitate a more interconnected and efficient way of urban living.

In this discussion, intelligent urbanism is the leveraging of technology for the purposes of urban development and living. For smart cities, as an anonymous reviewer pointed out, Illich’s notion of conviviality articulates two areas of study: (1) technology in the urban context; and (2) engagement of residents in the creation, implementation and assessment of such technologies. Combining these two areas leads to the establishment of an ecosystem of urban intelligence that includes among others human capital and collective intelligence. There are however other existing definitions of intelligent urbanism. In particular, the Principles of Intelligent Urbanism (PIU) are “a set of axioms, laying down a value-based framework, within which participatory planning can proceed” (Benninger, 2001). These axioms were developed by architect Christopher Benninger in an attempt to address a variety of urban planning issues. There are several tenets which overlap with this work, including “appropriate technology” and “conviviality” (Benninger, 2001).

The definition of “smart city” varies widely but is likely to include cities that are using technology to enhance public infrastructure, such as transportation and utilities, but also private residential housing and the work environment. Smart cities attempt to leverage such resources to address broader scale issues associated with urbanism. Sustainability is a prominent theme within the literature. Herbert Girardet, for instance, calls for the development of sustainable cities, defined as cities which use renewable energy, adopt a circular metabolism and carbon neutral transport systems. In order to accomplish this, technology, in addition to new opportunities in finance, policy and the commercial sector must be utilized. He advocates for the return of the city as a site for convivial living and the establishment of stable communities (Girardet, 1999).

We find that technology can be simultaneously used to constrain and expand boundaries of a city. This means that the concept of urban spaces as local and global becomes more fluid through the development of technology which facilitates the collection, analysis, and dissemination information designed for two conviviality-enabling purposes: (1) Creating technologies which enable individuals to interact with one another and build relationships; (2) Connecting, and coordinating critical activities, such as transportation, utilities (communication, energy, water, sewage) and public safety through a technologically sophisticated system. These two functions of technology in the urban environment map directly to two of Wirth’s most important assertions about urban life. The first is that urbanism overturns and destabilizes the traditional communities within which individuals were once accustomed to living, enabling the individual to live more autonomously (Wirth, 1938). The second assertion is that living in the city increases residents’ sense of isolation (Wirth, 1938). This is considered a downside to urban life and something that technology has and will continue to play a significant role in addressing.

Convivial Technologies for Urban Development

Ivan Illich criticized the institutions of industrialized society that enslaved individuals through the machines they used at work but outside of their control. With no real control over the mode of production, these individuals became beholden to using specific tools, in specific ways to increase the bottom line. It was this observation which led Illich to assert the importance of humans leading what he called a “convivial life style.” In order to have a convivial life, Illich asserted the need for people to have at their disposal, “convivial tools,” which could range from actual machinery or hand tools, to the skills and education required to operate machinery, to technology.

Illich takes issue with the notion that much of the production technology and machinery are controlled by corporations and other commercial institutions, with very little room left for members of society to use this technology in a way that is self-fulfilling. Because of Illich’s concern of the negative

effects created by purely industrial applications of science and technology, he calls for tools that work "with" people rather than "for" them (1973). Technology as a convivial tool should enable users to maximize their intellectual potential, be creative and live autonomously. Illich notes that "[i]n a convivial society, tools in existence should protect the following three values: survival, justice and self-defined work" (1973). In this sense, technology should be thought of as enabling a higher quality of life for urban residents, rather than limiting their activities to the principle of efficiency or the agenda of certain elite groups and institutions that have power and control over these technologies.

Case Study on Smart Grid Technologies

In 2009, an initiative was started that focused on using smart grid technology to more efficiently manage energy supply and demand. This was a collaborative effort among the City of Austin, the University of Texas at Austin and several commercial institutions, which formed the research and development organization, Pecan Street Inc. The resulting smart grid demonstration project is funded by the Department of Energy, the National Science Foundation and corporate partners. Over a five-year period a variety of systems will be tested in residences of the local Mueller community. These systems include: energy storage technologies, smart grid, water and irrigation systems, advanced meters and home energy management systems and new electricity pricing models (Pecan Street Inc., 2012a). The home test locations are the residences of volunteers in the community who allow their energy consumption to be monitored.

Various consumer electronics, automotive, and information technology companies have come on board to develop and test new products and technologies designed to work in conjunction with the smart grid. For example, home services systems integrate consumer smart grid products and services upon a common platform. Commercial partners are developing these service systems, which will address everything from home security and health care monitoring to entertainment and energy management needs (Pecan Street Inc., 2012a). Mueller, the community that serves as the test bed is a redevelopment designed to be a mixed-use, multi-income sustainable neighborhood. Citizen participation was considered a priority in developing this community from the perspective of the City of Austin and the partnering development firm (Mueller Community, 2012). This smart grid demonstration project recently expanded to the Dallas-Fort Worth area in Fall 2012. The information on this case is based on publicly available documents.

While there is clear resident involvement in this project, the extent to which these individuals are able to assume convivial use of the technology is less certain. In this initiative, residents are essentially serving as subjects for an experiment. Their responsibility as volunteers is to use the technologies and devices as they are provided so that commercial and research organizations can collect data on this usage in order to make better decisions about subsequent versions of the products. With this project, there are both significant requirements to be met and limitations to the participation of volunteers. Each volunteer is required to make a 24 month commitment to the project (Pecan Street Inc., 2012b). Pecan Street Inc. will uninstall all equipment after the testing period is over, meaning that volunteers retain no ownership over the technology. Volunteers are not able to choose what technology they can test; this decision is made by the research and development organization. Finally, data collected about a volunteer's energy usage habits are jointly owned by the volunteer and Pecan Street Inc. (Pecan Street Inc., 2012b). While the members of the smart grid consortium receive some opinions and feedback from community members about the initiative, it is difficult to determine at this point, the extent to which citizens' input has had an effect on the development of the technologies and how they will be used moving forward. While input from residents is sought, their ability to use and alter the provided technology in Illich's sense of conviviality is hardly achieved. Control over the technology is not given to the residents, who simply provide data in a real-life demonstration, but have limited insights into the smart grid laboratory (cf. Collins & Pinch, 1998).

Towards a Framework for Convivial Technology in Intelligent Urbanism

In acknowledging the challenges faced by municipalities, urban planners, developers, designers and architects to understand how conviviality might be integrated into cities public and private spaces , we suggest and briefly describe four elements that are necessary to promote conviviality through technology. These factors can be used to design, deploy and maintain technologies, which empower

residents. This will ensure their participation in the development and use of technologies, including a fair share of control and governance, and allow them to fully utilize technological resources to improve their quality of living.

Facilitate communication, share information and enable access to data- Communication and information sharing can take place at multiple levels and between multiple entities- between users, between users and systems, and between systems. Wirth (1938) addressed the way in which residents living in cities have an increased sense of isolation. Socially-oriented technologies can be leveraged to bring increasingly mobile, nomadic urbanites together both virtually and in the physical world. Further, data about and provided by the community should be made available to enable the building of convivial tools.

Create choices and enable decision making- Technology can help to provide more choices and alternatives for residents around transportation, healthcare, education, communication and more. Openness as an abstract concept allows residents to create and interact with technology, where possible, to reconfigure technology according to their needs. Given a plethora of options, technology can also collect, analyze and present insightful information to help individuals make sound decisions.

Engage in commons-informed governance- The participation of the people who will occupy the urban space and will be utilizing the technology throughout planning and deployment ensures that their needs and concerns are genuinely taken into account. Too often, tools and services are designed with a hypothetical user in mind, only to discover after the technology has been implemented that it is not the ideal fit for the particular context and intended users. The literature on common pool resources (CPRs) can provide guidance to inform governance regimes for convivial technologies in smart cities (Ostrom, 1990). Borrowing from CPRs, convivial technologies, to remain equitable, efficient and sustainable, must be governed by community members, who define and modify the rules around how the resource should be used (Hess & Ostrom, 2007). Similarly to CPRs, convivial technologies can be subject to social dilemmas; an appropriate governance regime will ensure that residents have a sense of responsibility towards sharing, control and the development of the technology that is embedded in the community itself.

Enhance experience on an aesthetic, multi-sensory level- Technology has created ever increasing mobility for its users and has enabled the manipulation of time and space in an urban environment. So often these benefits are considered through purely practical lenses, such as time and energy efficiency or business process improvement. But the experience of living in an urban environment for residents can be enhanced by technology on a more personal and emotional level. Technologies designed to encourage individuals to interact with their dynamic urban surroundings can create “an aesthetic experience rich with memory, imagination and brief encounters” (Williams, Robles & Dourish, 2008).

Conclusion

Given that society faces challenging problems in the 21st century that are reflected in the public as well as in the private spaces where individuals live and work, technology might be an ingredient in the solution of these multi-faceted issues. The same technology, however bears dystopian fears of surveillance and control. We chose Illich’s notion of conviviality to discuss and suggest a preliminary framework that should inspire one to think about how such technologies might be employed to enable a convivial life. However, we also have to take a step back and realize that technology alone is not the answer to that question, Illich invokes fundamental rethinking and reconfiguration of technology and beyond. In Illich’s terms, an intelligent urbanism that wants to achieve a convivial purpose must offer institutional choices to support a life of action and technologies that serve individuals themselves, rather than new ideologies and technologies that maintain a life style of consumption. Within new technology there is potential to enable a convivial life, that enables spontaneous, independent action while allowing individuals to interact and minimize isolation. However, technology as such has an inherent potential in making individuals dependent, putting them in a position of pure consumption. Thus, the opportunity of the individual to choose, to be part of the decision making not only in living an urban life but also in creation and maintenance of urban life is essential. Conviviality in intelligent urbanism comes down to questions of governance. To create technologies that adhere to convivial living, governance of those technologies is crucial.

References

Benninger, C. (2001). Principles of Intelligent Urbanism. Ekistics 69(412), 39–65.

Collins, H. M., & Pinch, T. J. (1998). The Golem at Large: What You Should Know about Technology. Cambridge: Cambridge University Press.

Giradet, H. (1999). Creating Sustainable Cities. Foxhole: Green Books Ltd.

Hess, C. & Ostrom, E. (2007). Understanding Knowledge as a Commons: From Theory to Practice. Cambridge: MIT Press.

Illich, I. (1973). Tools for Conviviality. New York: Harper Row.

Mueller Community (2012). Sustainable Affordability. Retrieved from: http://web.archive.org/web/20110717170703/http://www.muelleraustin.com/homes/sustaining-affordability

Ostrom, E. (1990). Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.

Pecan Street Inc. (2012a). What is Pecan Street Inc.? Retrieved from: http://www.pecanstreet.org/about/what-is-pecan-street-inc/

Pecan Street Inc. (2012b). Participation Agreement for Mueller-Area Residents. Retrieved from: http://www.pecanstreet.org/wordpress/wp-content/uploads/2011/07/Participant-Agreement-DOE-Group-B1.pdf

United Nations (2012). World Urbanization Prospects, the 2011 Revision. Department of Economic and Social Affairs. Retrieved from: http://esa.un.org/unpd/wup/pdf/FINAL-FINAL_REPORT WUP2011_Annextables_01Aug2012_Final.pdf

Werz, M. & Conley, L. (2012). Climate Change, Migration, and Conflict: Addressing complex crisis scenarios in the 21st Century. Center for American Progress. Retrieved from: http://www.americanprogress.org/issues/2012/01/pdf/climate_migration.pdf

Williams, A., Robles, E., & Dourish, P. (2008).Urbane-ing the City: Examining and Refining the Assumptions Behind Urban Informatics. Handbook of Research on Urban Informatics: The Practice and Promise of the Real-Time City. Hershey, PA: Information Science Reference, IGI Global.

Wirth, L. (1938). Urbanism as a way of life. The American Journal of Sociology 44(1), 1-24.