ConnectiCity: Real-Time Observation and Interaction for Cities Using Information Harvested from Social Networks

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ABSTRACT

This paper presents the approaches, methodologies and results of a multidisciplinary research project which, over the last 4 years, was able to investigate on the possibility to observe the behavior of city dwellers using information harvested from social networks which was then analyzed using Natural Language Processing techniques to gather insights about the emotions and themes expressed in the messages, and Geo-Referencing, Geo-Parsing and Geo-Coding techniques to understand their relevancy to the various parts of the city. Infoaesthetics and multiple forms of information visualization were designed and used to make information accessible from a variety of perspectives, including ones created to suggest novel practices for Urban Planning, and some versions designed to suggest and support citizen-initiated activities. Research results have been presented, over time, under the form of live prototypes which used urban screens, web applications, mobile applications, and digital devices to promote novel practices for city administration and governance, as well as for participatory and peer-to-peer Urban Planning techniques which would benefit from the produced technologies, methodologies and visualization and interaction metaphors.

Keywords: Cognitive Informatics, Computer-Mediated Communication, E-Collaboration, Human Aspects of Technology, Information Systems, Knowledge Management, Semantic Web, Ubiquitous & Pervasive Computing, Urban and Regional Development

INTRODUCTION

The activities which we perform during our daily lives have the effect of continuously re-programming the spaces around us (Porteous, 1976).

The ways in which we reinterpret and personalize spaces is able to effectively communicate information about our emotional states, working methodologies, knowledge, skills, cultural backgrounds, desires, visions and perception of the city and its shops, parks, offices, houses, schools, as suggested in (Scheiber, 1990; Krupat & Guild, 1980; Nasar, 1989) among many others. These processes have direct impact on the transformation of spaces, which are visible at the levels of households, communities, neighborhoods and entire cities.
“In the course of time every section and quarter of the city takes on something of the character and qualities of its inhabitants. Each separate part of the city is inevitably stained with the peculiar sentiments of its population.”

(Gottdiener, 1994)

Looking in the opposite direction, the form and essence of urban space directly affects people’s behavior, describing in their perception what is possible or impossible, allowed or prohibited, suggested or advised against (Horton & Reynolds, 1971).

The wide availability and accessibility of ubiquitous technologies substantially radicalizes all these tendencies. As suggested by Zook and Graham (2007) and by other scholars (such as Zeisel, 2006; McCullough, 2004; Fat-tahi, 2009) we are now able to fill and stratify space/time with layers of digital information, completely wrapping cities in a membrane of information and of opportunities for interaction and communication.

This scenario enables multiple opportunities touching domains such as art, design, architecture, anthropology, urban planning, communication science: the possibility to grasp and understand human beings’ continuous state of re-interpretation of the world to infer information, suggestions and visions about the ways in which people transform their reality, in both plan and action.

A set of objectives can be set forth:

- Gaining a better understanding of human presence in urban spaces;
- Design visualizations which are able to represent the ways in which people re-program and reinterpret the spaces of the city, making them accessible to support the goals of different disciplines such as urban planning, city and community development;
- Allow observing in real-time the digital discussions taking place in cities to understand the emotional approaches, themes and issues which emerge from human perception of the city, potentially providing valuable, relevant information on issues related to ecology, mobility, land use, need for services and infrastructures, sense of place, definition of emergent boundaries, attention groups, health, safety;
- Producing tools to be able to listen to all the richness represented by the possibility to listen in real-time to the city, across cultures, languages, backgrounds, religions, nationalities and political creeds;
- Create methodologies, for all actors involved, according to which the possibility to listen and understand the expressions of needs and emotions of people which can become a valuable tool to create new, ethical, sustainable, participatory policies, plans, businesses, initiatives, processes;
- Enact initiatives in which citizens, organizations and institutions take part into a choral effort to actively accomplish a different form of urban space in which both citizens and administrators become active, aware and insightful agencies.

TRANSFORMING THE SENSE OF PLACE

Portable devices transform our experience of spaces.

For example, Sony Walkman’s design powerfully introduced the possibility of being in two places at once through the personalized sounds playing through our headphones, creating a powerful conjunction between physical space and the imaginary space created by the music (Du Gay, 1997). Devices like the Sony Walkman allow us to traverse urban spaces – with their cognitive, aesthetic and moral significance – and to benefit from the use of a critical tool in the management of our space and time, in the construction of boundaries around ourselves, and in the creation of sites of fantasy and memory (Bull, 2000).

Mobile devices, smartphones, wearables, digital tags, location based services and mixed/augmented reality have gone much further in this direction, turning the world into an essen-