

Chapter 9

Public Perception Spatial Data From the PPGIS Jaguarão Experiment

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ABSTRACT

This chapter addresses PPGIS (Public Participation Geographic Information Systems), a participatory method through which the public can produce maps and spatial data that represent their perceptions of the urban space in question. Specifically, it analyzes the data collected from an experiment in Jaguarão, Brazil. The data represents the perceptions of a small group of inhabitants about the problems and potential of the city's urban area. The procedures include an exploratory analysis and data visualization in the form of maps that allow describing a variable's distribution and identifying patterns. Moreover, for some issues, the authors cross the perception collected data with infrastructure data, socioeconomic data, and cadastral data to study possible associations among these different types of information layers. The results show that public perception, collected through PPGIS, forms an additional information layer that could be analyzed together with other information layers commonly used in urban planning, and thus to be taken into account for designing better cities.

INTRODUCTION

Cities are complex organizations, and therefore the production, use, and exchange of spatial knowledge in various forms are essential processes for its planning and management (Rocha & Pereira, 2011; Pfeffer et al., 2012). It is from the confrontation between inhabitants' knowledge, subjective and difficult to generalize, and experts' knowledge, objective and abstract, that a better comprehension of a given territory arises (Friedmann, 2007; Joliveau, 2008).

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But the planning system is still mainly based on the technical approach, which emphasizes accurate and unambiguous information. Urban planning in general uses only official data, in which aggregated statistics are the only way to take people into account (Friedmann, 2007; Brabham, 2009). Experts' knowledge is dominant in urban planning, given that planners have the power to choose which knowledge to use and how to use it, and this choice is almost always based on those experts' own professional values (Rantanen & Kahila, 2009). According to Wallin & Horelli (2012), it is difficult to move from a planning system dominated by specialists to one that gives voice to different stakeholders.

Knowing how to analyze and use inhabitants' knowledge consistently in urban planning is a crucial issue (Kahila & Kytä, 2009; Brown & Reed, 2009). Knowledge integration therefore is an aspiration for a deeper and more impactful participatory planning (Brown, 2012a). The democratic potential of participatory planning is challenged when it fails to incorporate inhabitants' knowledge significantly (Brabham, 2009). But so far, in general, planners have failed to address the perspective of the population consistently in urban planning (Talen, 2000; Corburn, 2003; Rantanen & Kahila, 2009; Brown & Reed, 2009).

The growing emphasis on participatory processes puts pressure upon planners to find new ways of combining their expertise with the knowledge that only inhabitants have (Van Herzele & Van Woerkum, 2008). However, involving the public in urban planning is not a straightforward task. As Forester (2006, p. 447) states: "Easy to preach but difficult to practice, effective public participation in planning and public management calls for sensitivity and technique, imagination and guts." In spite of pro-participation laws and the widely accepted discourse that this is the right thing to do (Taylor, 1998; Innes, 1998), the reality is that many of the supposed benefits of participation are not being achieved (Innes & Booher, 2004; Klessmann, 2010).

At the same time, the citizens and the cities are becoming smart "in ways that enable us to monitor, understand, analyze and plan the city to improve the efficiency, equity and quality of life in real time" (Batty et al., 2012, p. 2). Digital tools are becoming ubiquitous in everyday life and have high potential for the collection of socio-spatial and temporal data. The emerging urban environments are completely different from anything that has been experienced so far. It is a new context, where a much larger group of citizens can engage (Rocha & Pereira, 2011; Pfeffer et al, 2012.). Soon, most of the data to be used to understand the cities will come from personal transactions, challenging the static models of data collection and interpretation commonly used in urban planning (Batty et al., 2012).

Thus, distinguished authors advocate the need for a reformulation in urban planning through the use of technologies that enable the creation of more interactive and collaborative techniques and methodologies (Hansen & Reinau, 2006; Yigitcanlar, 2006; Brown & Reed, 2009; Horelli, 2013). According to Batty et al. (2012, p. 4): "new sources of urban data (...) and all the apparatus used in engaging the community in developing smart cities require new forms of online participation making use of the latest ICT in terms of distributed computation."

In this regard, recent technological advances around Information and Communication Technology (ICT) and Geographic Information Systems (GIS) include new perspectives. Noteworthy among such advances are the interaction provided by social networks, the easy access to information and knowledge, the sophisticated tools freely available, the increased interactivity between users and systems, and the ubiquity of geographical information (Jazayeri, 2007; Batty et al., 2012). In addition to sensor networks, interactive interfaces in public spaces, and mobile devices, in the smart city.

Nowadays people not only consume content by downloading information but also contribute and produce new content by uploading information on the Internet (Vossen & Hagemann, 2007). Before,

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