

## Chapter 28

# Use of Qualitative Methods to Examine GIS Planning and Management in the Context of E-Governance

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### ABSTRACT

*Critical GIS recognizes that GIS technology is socially constructed and emphasizes the key role of various socio-political and institutional contexts in shaping GIS knowledge production. This article focusses on the use of GIS in the context of e-governance in India. In recent years the massive proliferation of ICTs in India has led to a transformation from traditional governance to e – governance. Several planning projects have been launched under the rubric of e-governance and have witnessed novel use of various information technologies, GIS being one of them. The theoretical framework used in this study draws from the Critical GIS body of literature that calls for taking a holistic approach to GIS examination by coupling the internal contexts with the external contextual environment shaping an organization's GIS planning and management. In order to achieve this goal qualitative methods of inquiry are adopted to investigate a municipal e-governance project launched by the Government of Karnataka to address issues of urban development using GIS.*

### INTRODUCTION

GIS research programs have evolved dramatically since the 1990s, when traditional GIS use first caught the attention of critical geographers (Schuurman, 2000). GIS carries various meanings. Traditional school of thought defines GIS as a set of digital technologies or tool for storing, managing, analyzing, and representing geospatial information. However, there is also recognition that GIS is more than a collection of data models, data structures, hardware, and software. It is increasingly recognized as a collection of socially constructed practices and various social, political, and institutional contexts that play key roles in shaping geographic knowledge and representation (Chrisman, 1988; 2005; Sheppard, 2006).

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GIS spatial knowledge production is a dynamic process constantly rebuilt through negotiation and politics involved in its design, development, and use. Hence, examining GIS spatial knowledge production would mean excavating the multiple internal and external contextual elements within which the process is embedded. This philosophy has emerged from a body of knowledge defined as *Critical GIS* that highlight novel and non-quantitative overview of GIS (Schuurman, 2002; Sheppard, 2006).

This body of knowledge has inspired GIS scholars to unravel GIS practices within diverse theoretical frameworks. One such research umbrella has seen a close integration of qualitative methodologies to excavate the complexities of GIS use (e.g., Boschmann & Cubbon, 2013; Cope & Elwood, 2009; Knigge & Cope, 2006; Kwan, 2007, 2008; Pavlovskaya, 2002, 2004, 2009; Schoepfer & Rogers, 2014).

The earliest attempts to integrate qualitative methodologies and GIS studies were made by participatory GIS researchers (Brown & Kytta, 2014; Elwood & Ghose 2004; Ghose & Huxhold 2001; Harris, Weiner, Warner, & Levin, 1995; Sieber, 2000). For instance, Harris et al. (1995) explored how local knowledge of various participants can be used to sketch maps and this local knowledge can then be converted into data within a GIS. Others used qualitative approaches including case study research method and qualitative modes of data collection such as participant observation and interviews to explore the process of GIS access to grassroots groups and other nontraditional users (Elwood, 2006; Ghose & Huxhold, 2001; Harris & Weiner, 1998; Sieber, 2000).

Qualitative approaches examine whether GIS access allows development of alternative knowledge and its inclusion in decision-making. Researchers have also shown through qualitative research strategies that community organizations use GIS analysis for generating new information, corroborating existing knowledge, monitoring and predicting change in their neighborhood, investigating relationships and processes underlying neighborhood conditions, and attracting external funders (Ghose, 2005; 2007; Harris et al., 1995). Through the use of qualitative methods, these PPGIS studies provide us with key insights that are valuable in understanding the complex role of various socio-political contexts in shaping GIS knowledge production and vice versa.

Another set of key studies that have used qualitative methodologies with GIS include work done by human geographers (Jung, 2009; Knigge & Cope, 2009; Kwan, 2002a; 2002b; 2007; Kwan & Ding, 2008; Matthews, Detwiler, & Burton, 2005; McLafferty, 2002; Pavlovskaya, 2002; 2004; 2009). For instance, in a study on breast cancer in Long Island, New York surveys were conducted to identify various factors contributing to breast cancer; the survey information was then converted into GIS data for mapping and analysis purpose. Here GIS was used to address women's queries about breast cancer in the community. These queries were based on local knowledge of community residents which was based on their own fears, experiences, and concerns. For these women, GIS provided a tool for representing and visualizing environments beyond the scope of daily experience and for connecting their personal experiences of health and illness to a wider social and political agenda. Pavlovskaya (2002; 2004) used GIS maps to complement the ethnographic data she collected to explore the geographical accessibility of jobs, services, and resources for women and how these have changed in response to economic restructuring, globalization and welfare reforms in post-Soviet Moscow. Matthews et al. (2005) incorporated census data into a GIS database to enhance interpretation of ethnographic data collected by means of qualitative methodologies. Another seminal work on integrating and analyzing qualitative data into GIS was done by Kwan (2002a; 2002b; 2007). In her study, GIS was used to construct cartographic narratives to tell stories about Muslim women's experiences of the urban environment after 11 September 2001.

Studies conducted by certain researchers have used a qualitative approach to explain the complex process of inter-organizational issues and its impacts on GIS use (Budic, 2000; Harvey, 2003; Harvey &

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