Chapter 83
A Reflection on the Ph.D. Program in Spatially Integrated Social Science at the University of Toledo

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ABSTRACT

The use of spatial analysis tools is on the rise in many academic fields and practical applications. These tools enhance the ability to examine data from spatial perspectives. Though the study of place and space has traditionally been the domain of the field of geography, growing numbers of researchers are turning to these tools in the social sciences and beyond. The University of Toledo has established a unique Ph.D. granting program to encompass the theories, tools, and applications of spatially integrated social science. In the first couple of years of its inception the program has attracted students from different places and diverse backgrounds. It is expected that the program will continue to thrive in attracting diverse students, securing external grants, and positively impacting on the economy of Northwest Ohio. This paper is a personal reflection of the views of the authors on the Ph.D. program in Spatially Integrated Social Science at the University of Toledo two years after its inception in fall 2009. The views, by no means, are of the University of Toledo, its SISS program, or any of the participating departments and faculty members.

DOI: 10.4018/978-1-4666-2038-4.ch083

INTRODUCTION

The use of a variety of spatial analysis tools is increasing in social science research. While social problems and study areas span multiple disciplines, the question of location has historically been the domain of geographers. The prevalence of cutting-edge technologies like Geographic Information Systems (GIS) and Global Positioning Systems (GPS) in the social sciences is facilitating the study of the role of place in the society. Thus, geography can be a unifying field for the social sciences, wherein traditional data analysis can be conducted within the context of place.

While each discipline has historically possessed its own set of analytic tools, the increasing ability to measure processes in a spatiotemporal context facilitates sharing of these new tools, a general development that can then be applied to local and unique conditions (Goodchild et al., 2000). Human demographic data, for example, has historically been presented in a series of tables. However, Weeks (2004) argues that such data is spatial in nature because it deals with characteristics of human populations in specific regions. It varies based on time, space, and scale. The recent shift towards locational information in data sets and displaying data in interactive maps in addition to traditional tables and charts has brought to light the importance and usefulness of spatial ways of looking at data in the social sciences.

As GIS tools have become more powerful and more widely available, they have been increasingly used in the application side of the social sciences. More and more it is being realized that these tools are equally powerful for theoretical queries and social research. As Sui (2004) asks, GIS is the answer, but what is the question? Sui (2004) goes on to argue that advances in geocomputation will continue to bring social science disciplines into the trend of spatializing previously non-spatial data.

Spatial analysis is both an inductive and deductive tool, as it can reveal unforeseen patterns and test existing theories about expected patterns (Goodchild & Janelle, 2004). Anselin (2006) categorizes spatial analysis techniques into three general groups: exploratory spatial data analysis (searching for patterns), visualization (methods of showing the patterns), and spatial modeling (methods of explaining and predicting patterns). Recently, the development of the GeoDa software has created a program capable of both advanced spatial statistics and mapping (Anselin et al., 2006).

WHY SPATIALLY INTEGRATED SOCIAL SCIENCE?

As much as GIS has revolutionized many disciplines and practices, including the social sciences, GIS itself does not fully account for or measure the complexities and relationships inherent in spatial data (Páez & Scott, 2004). Páez and Scott (2004) argue that current GIS software, even with the recent inclusion of spatial modeling, do not adequately account for heterogeneity, interdependence or spatial association, and thus are not as accurate or useful as it could be if more advanced spatial statistics were used. Logan et al. (2010) argue that GIS gives way to more complex spatial analysis tools when patterns on a map lead to additional questions that simple visualization cannot answer. For example, a traditional chloropleth map made in GIS does not take into account the outliers or an uneven population. The longstanding method of collecting data in tables and translating it to maps only scratches the surface of displaying and analyzing spatial data.

The last decade has seen the development of a cohesive shift towards spatial ways of thinking about social data and a demand for tools that facilitate this approach (Voss, 2007). This area of study is increasingly referred to as Spatially Integrated Social Science (SISS). A few key programs have progressed SISS techniques, including the University of California at Santa Barbara (UCSB), which is home to many centers and programs