

receding into the distance.”(253) The term represents an elusive quest for knowledge and the control that knowledge brings. Utilizing sources from several major libraries and cartographic collections, displaying dozens of key illustrations, and having command of several languages, Hiatt makes of *Terra Incognita* a well reasoned, solidly documented case that is both organizationally and stylistically well constructed. Chapters begin with useful prefatory remarks describing what is to follow and end by persuasively showing how developments in that chapter prepare the ground for its successor.

Convinced of his own view, Hiatt’s reasoning and documentation are uncharacteristically thin in one or two spots. For example, in his discussion of extensive text being placed on depictions of *Terra Australis*, where he focuses closely on one particularly crowded cartouche, his frustrations lead him to assert that “such is the illegibility of the words in these panels when seen from any distance that one must conclude that the multiplicity of text . . . is designed to be seen primarily as a whole, and not read. Or rather, that instead of being a display of text intended to be read, it is intended to be read as a display of text” (232). He seems here to confound effect with intent; other paleographers often struggle with documents having extremely crowded, nearly illegible text bodies without reaching similar conclusions. Similarly, although Hiatt acknowledges that there is little surviving evidence that Ortelius gave much thought to the southern continent, he suggests that Ortelius might have thought of *terra incognita* as part of “the scorned world” because recent studies have linked him with a neo-Stoic religious group and neo-Stoics were known to have distinguished “scorned” from “adorned” portions of the world (234). Such stretches are few, though, and not entirely without foundation.

*Terra Incognita* is a solid research effort reminiscent of the sort found in the University of Chicago Press’s multi-volume *History of Cartography*. Like that series, a separate volume will be needed to document non-European treatments of the same topic. For the period and subject matter identified by its title, *Terra Incognita: Mapping the Antipodes before 1600* is the definitive word on the topic. In that regard, Hiatt comes to resemble some of the medieval translators he describes early in his book, who both transmitted and enhanced the earlier sources they were reviewing and thus contributed to an ongoing cartographic tradition.

### Understanding Place: GIS and Mapping across the Curriculum

Diana Stuart Sinton and Jennifer J. Lund, editors

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Reviewing a book always is a good opportunity to go one step further than just reading. You have to think like the writer, the publisher, and, of course, the reader.

Reading, according to Umberto Eco, is like “living more” through the writer’s thoughts, and we can agree that a good book is the book that guides you to new thoughts, new images, and finally to new places. *Understanding Place: GIS and Mapping across the Curriculum* is a book that succeeds on this concept. The editors, Diana Stuart Sinton and Jennifer L. Lund, have done excellent work with the help of a big number of writers. Thirty-six writers sign the nineteen chapters of this book, and they give us something new: a holistic approach about the use of GIS and mapping in teaching, learning, and researching across many subjects from liberal arts to humanities.

Reading this book helps one to understand that map making and map reading are not mechanical activities but aspects that need communication skills. GIS today provides the controls of how, when, and where all information will be displayed. That’s why maps and GIS are valuable in a teaching and learning environment ( Medyckyj-Scott and Hearnshaw 1994).

The structure of the book is divided in two basic parts. In the first part of the book, five chapters reference one of the basic issues for so many instructors: how to teach students to think spatially. In this main part, many professors write about the way they use GIS to help students to think and learn in a more spatial way.

Terms like distance, proximity, and pattern recognition are some of the main subjects which interest instructors today. Basic geographic terms, like how to transform a data matrix into a map and by this change view and analyze scales in order to come to different conclusions, are also some of the basic aspects of this part.

Students who work with GIS learn to explore new ways of thinking and knowing. By using maps and geographic systems, they develop new skills of thinking with information images and become intelligent consumers of visual information and effective communicators with maps. They can actually learn to organize their thoughts for complex issues of their studies as layers of a geographic information system.

In Chapter 2, "About that G in GIS," Diana Stuart Sinton and Sarah Witham Bednarz make a very interesting observation about "[h]ow maps, mapping and GIS can help students become spatially aware and appreciate the impact that geographical location has to influence about everything." This remark can drive us to think of GIS as a basic need and a powerful tool of analysis in our complex, multidimensional world. According to the authors, everything in our memories is connected with *where*. Using the image of *where*, we bring back a recollection of *who* and *what*. Thus, spatial thinking has tremendous potential in the pedagogical process. But is it enough to simply make use of a software package? Are software skills all that is required in learning to think spatially and to answer or analyze sophisticated, spatially based questions? According to the writers there is a lack of training among college faculty members themselves to think, live, analyze, and synthesize spatially based questions. Fortunately, Internet-based mapping, new capabilities of software packages (like time-based representations and analysis), and, above all, the importance of spatial thinking itself may one day drive us to spatial-thinking standards in our education.

In Chapter 3, David Staley discusses the use and need for map making in history classes. One of the basic ideas of the chapter is to understand maps as theaters of historical events and phenomena: to see that "All maps contain stories, diachronic or synchronic, temporal or spatial." The relation of geography, history, and cartography has always been strong, and it becomes even stronger with the use of technology and GIS.

In Chapter 4, Jennifer J. Lund describes the basic relationship that exists between socioeconomic data and the quantitative analysis available through GIS. Can discovering the satisfaction of posing a question, getting an answer, and immediately perceiving its import encourage students to work harder?

By teaching students how to map complex geographic data, we give them a tool to comprehend relationships within any multidimensional system of society.

Chapter 5 is the final chapter of the first part of the book. In it, Melissa Kesler Gilbert and John B. Krygier provide examples of GIS projects initiated at small, liberal arts colleges. The Ohio 2001 GIS project, for example, which involved faculty, students, and city residents, developed a system of networked bicycle paths. Other projects from Carleton College, Grinnell College, Macalester College, Middlebury College, and Swarthmore College are also described. Conclusions of this interesting chapter come to prove that GIS community work in higher education could be informed and enhanced by the innovative pedagogy of service learning. From this chapter the reader can get new

ideas for similar projects in his or her own neighborhood.

In the second, and final part of this book, fourteen chapters focus on GIS case studies in the curriculum.

The basic question, in the first six chapters of the second part, is the relation between the social sciences and place. Although social scientists have recognized the significance of place in human behavior for many years, GIS and today's technology offers many new tools to their science. That is why, in many colleges and ever more undergraduate courses, complex GIS software is used by students. There is a close connection between research from these new technologies and previous knowledge in social sciences.

Undergraduate students of social science background are encouraged to learn and work with GIS, where they can begin from the amazing (for them) portrayal of spatial information through maps and continue on to make all the spatial analysis by themselves. By examining "social puzzles" in space, they discover evidences of social phenomena and their relation with natural and human space.

In Chapter 7, James Booker from Siena College in New York explores the relation between economics and space at different scales of analysis, from global to local. According to the writer of this chapter "What GIS can best offer economics is access to the data itself, a tool to manipulate data mathematically and iteratively." Many examples of this are offered in his article. Gross domestic product (GDP) per capita for the whole world, African railroads, and the location of Japanese auto manufacturing facilities in Flint, Michigan, are a few of the examples of economic variables which are analyzed through GIS. Related economic variables are also used as examples of GIS capabilities. U.S. federal lands and population pressure, unemployment rate by state, comparison of household income in the New Orleans area prior to and after Hurricane Katrina, and tax maps using hedonic models on parcel land values are some of the examples that prove that the relationship between space and economics allows GIS to be used to discover faster and more accurate methods of analysis.

In Chapter 8 the main question is the use of GIS as a tool in anthropological research. The example for this chapter comes from Republic of Guinea and the area of Kissidougou. The question is: can we appropriately map the human geography of the Guinea Savanna? According to the student research, GIS can have an important value for anthropological research because we can analyze interactions within the human environment of one area against the differing but equally valid situation in other areas.

Political scientists Mark Rush and John Blackburn discover the GIS abilities for quantitative analysis through their course at Washington and Lee Univer-

sity. In Chapter 9 they discuss the legal and academic background of the redistricting process and law and how that can integrate GIS instruction.

In urban studies GIS has a major part, especially in analysis and mapping of spatial data. How students can use GIS to present and organize a problem, define what they know (and what they don't know), and finally summarize their findings is discussed in Chapter 10.

Archeology is a subject in which GIS can be utilized to generate the substantial, collective knowledge that fuels an archaeologist's instruction. In Chapter 11, Pedar W. Foss and Rebecca K. Schindler give us an example of teaching a multi-institutional course that contains a field component, an online learning component, and construction of a major research database at Collaboratory for GIS and Mediterranean Archeology (CGMA) in DePauw University in Greencastle, Indiana.

In Chapters 12 to 15 the relation between GIS and natural sciences and phenomena is represented. How GIS can support research and teaching in natural sciences or model and represent natural phenomena are the main aspects.

In biology for example, GIS can be used, according to Chapter 12, to help students consider interrelated factors that influence the abundance and distribution of organisms, communities, and ecosystems. Benefits of GIS in sampling and visualizing data, and especially mapping of ecology with the use of GPS and GIS, are discussed in Chapter 12. In Chapter 13 the modeling of the Maine lakes environmental area is studied, while in Chapter 14 a different scale approach is used to investigate soil erosion and deposition in the lab and field. Geology is the main field for integrating with GIS in Chapter 15, where the longterm hydrologic impacts of land-use change, and ways of relating GIS with geosciences, are the main objectives.

In Chapters 16 and 17 the spatial thinking is focused in the arts, humanities, and languages. In Chapter 16 French society and culture is connected to sociology and geography with the use of GIS, and architectural heritage is mapped in Chapter 17, where historical geography is the frame of discussion.

GIS is of great importance in a religious study, where the exploration of pluralism and diversity are analyzed in New London. Mapping this religious analysis and comparing it with other factors like income or Hispanic and English population are presented with the use of GIS.

In the nineteenth and final chapter of the book, Jennifer J. Lund maps musicology and musicians. Music diaspora as a factor of cultural diaspora proves the advantage of geographical analysis of musicology.

After finishing this book, readers cannot help but find themselves with new ideas about the use of GIS

in their fields, regardless of their subjects or positions. Diana Stuart Sinton and Jennifer J. Lund manage to cover so many things in this one book that they truly prove the real "place" of GIS in the curriculum: It is anywhere, and it is everywhere.

## Reference

Medyckyj-Scott, David, and Hilary M Hearnshaw, ed. 1994. *Human factors in geographical information systems*. Hoboken: Wiley.