

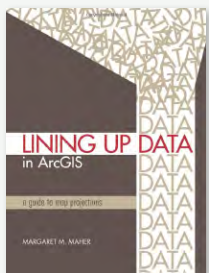
The essays were contributed by a variety of authors, so no single writing style predominates. All the essays were well written and easily understood, and accompanied by maps, charts, and diagrams which were also well designed, descriptive, and easily understood. Most of the material captured my attention and interest. It was easy, while reading the essays, to follow along on the maps, which were clear and immediately understandable.

One of Dr Stephens' main goals in publishing *Texas: A Historical Atlas* was to update and expand on his earlier version of the work, the *Historical Atlas of Texas*. While I cannot compare this new atlas to the earlier publication, I can vouch for the strengths of this edition. I grew up in Texas, in Live Oak County, and in reading through this book have learned a great deal more about my home state's history than I had imagined possible. I would definitely recommend *Texas: A Historical Atlas* as a reference and possibly a text book for Texas history and geography classes, or even generally, for the avid know-it-all Texan.

Notes

1. Author Interview, undated press release, (Norman, OK: University of Oklahoma Press, 2010).

LINING UP DATA IN ARCGIS: A GUIDE TO MAP PROJECTIONS



By Margaret Maher.

Lining Up Data in ArcGIS: A Guide to Map Projections

By Margaret Maher.

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184 Pages

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Review by: Fritz C. Kessler

The map in Figure 1 shows the county outlines for West Virginia, and, offset somewhat to the east, point features for West Virginia's county seats. Obviously, the two data sets should line up but do not. If you have worked with spatial data, you have probably experienced a similar situation. Do you know how to solve this mis-alignment problem? If not, then *Lining Up Data in ArcGIS* is a resource that you should examine. *Lining Up Data* provides an elementary approach to understanding how users interact with ArcGIS to identify, define, and manipulate coordinate systems with the end goal of making sure their data aligns properly. This is a tall order for any book to fill, and this is the first text that takes this elementary yet practical method to solving the most common coordinate system problems in the GIS

(geographic information system) environment—a novel approach to a topic that has undoubtedly frustrated many GIS users.

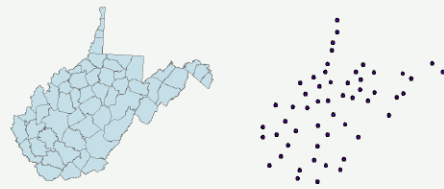


Figure 1. An example of data sets that should align but do not.

Lining Up Data begins with a Table of Contents, moves on to a Preface, a short statement on the author, and then includes an Introduction. The Introduction to *Lining Up Data* simply lists thirteen common questions/problems that GIS users are likely to encounter when working with spatial data in the ArcGIS environment. These questions/problems are the basic fodder for the ten chapters that follow.

Chapter 1 is a primer on how to identify the type of coordinate system that is loaded into your ArcGIS environment. The chapter begins with a useful overview of some common error messages and warnings that users may encounter while working with coordinate systems. The utility of defining a map projection and of using the *project* command, and the differences between the two, are explained in some detail. A useful section on identifying a map projection based on the numeric extents of the coordinate values is provided. The difference between geographic, projected, and local coordinate systems is also explained.

Chapter 2 helps you identify a spatial data set's geographic coordinate system. The chapter provides step-by-step explanations of two common mis-alignment problems in ArcGIS. The first problem is a datum mismatch situation (e.g., one data set is cast in the NAD27 datum and the other is set to the NAD83 datum). The second example occurs when one data set has an assigned projected coordinate system while the second data set has only a geographic coordinate system defined. As explained in the chapter, a partial solution to these problems involves a datum transformation.

Chapter 3 assists in identifying a spatial data set's projected coordinate system. In this chapter, discussion begins with a focus on two common grid systems: the State Plane Coordinate System and the Universal Transverse Mercator coordinate system. For each grid system, attention is paid to explaining how the coordinate limits reported in the Layer Properties window can help the user identify which projected coordinate system is being used and how to remedy situations where, for example, no coordinate system definition has been applied to a spatial data set. There are many helpful hints provided throughout the chapter

on ways to identify and resolve problems with alignment issues when a spatial data set is cast in a grid system.

Chapter 4 presents information dealing with coordinate systems that use non-standard measurement units. For example, the Universal Transverse Mercator system uses meters as the default unit of measurement. For instances where the desired unit of measurement is feet, *Lining up Data* explains the steps necessary to modify the associated projection file. This chapter concludes with an explanation of how to alter existing projection files and choose the appropriate units of measurement for the data set.

Both chapters 5 and 6 detail the use of computer assisted design (CAD) files in ArcGIS. Chapter 5 starts with a list of seven issues that will be commonly encountered when using CAD files in ArcMap. Some of these issues include non-standard units, an attached local coordinate system with an arbitrary origin, and problems with rotation. Chapter 5 proceeds to explain how to address and remedy each of the seven issues in ArcMap. Chapter 6 takes the reader through a step-by-step process on how to align and rotate CAD data in ArcMap.

Chapters 7 and 8 focus on datum transformations. Before discussing datum transformations in ArcMap, the chapter smartly begins by pointing out the utility of the European Petroleum Survey Group's authoritative database on datums and their transformations. Attention then turns toward a light discussion on the difference between three and seven parameter methods, HARN and NADCON, and NTV2 and Molodensky-Badekas transformation methods. The chapter wraps up with a quick overview of creating and saving a custom datum transformation. Chapter 8 discusses how to apply datum transformations, how to change the coordinate system in the data frame environment, and the use of the project tool.

Chapter 9 takes on the age-old question of *what map projection should I use?* The chapter makes a distinction between a geographic and projected coordinate system. The bulk of the chapter concentrates on projected coordinate systems: their properties, which map projection is best-suited for a particular purpose, how to create a customized map projection, how placement of standard lines can impact length measurements, and the purpose served by false eastings and northings.

Chapter 10 is an amalgam of topics, and discusses projection files, adding data, and buffers. Discussion begins by highlighting the difference between geographic and projected coordinate systems. The discussion of projection files (identifiable by the .prj file extension) and their contents is covered separately under each type of coordinate system. An overview of adding x, y data into ArcMap and how to convert these data to a shapefile or geodatabase feature class is explained. The chapter ends

with an explanation as to why buffers drawn in ArcMap are not always round.

Three appendices are included. Appendix A includes references to Knowledge Base articles from the Esri Support Center, where the interested reader will find articles covering a variety of topics dealing with map projections, datums, and grid systems. Appendix B lists the default install paths for ArcGIS desktop, which includes version 9.x and 10.0. Appendix C lists the default profile paths to the coordinate system folder (versions 9.3, 9.3.1, and 10.0 only). A "further reading" section (listing only three texts—two of which are map projection related), data source credits, and an index of terms round out the book.

The key strength of this book is the no-nonsense approach on clearly explaining how to correct common situations in ArcGIS when spatial data do not line up. Each chapter contains numerous screen shots of data, forms, maps, and graphics to explain why spatial data do or do not line up in ArcGIS. The chapters are concise, focusing discussion on various coordinate systems topics and their interplay in ArcGIS, which helps the reader quickly find a solution to a problem. All maps and graphics are presented in full color on the same referring page rather than being tucked away near the end of the book. Almost every spatial data alignment problem is illustrated with a map or graphic. The fact that it includes many screen captures of windows—showing what to choose from pull-down lists or which buttons to select to gain access to other windows—is quite helpful. Those with a math phobia will want to take note here. There is a deliberate avoidance of mathematical explanations throughout the text. If the reader is interested to know the mathematical foundation of a Helmert seven-parameter datum transformation, they should look elsewhere.

There are some contentious issues with this text. First, a few minor points. The examples used throughout the book are mostly limited to the coterminous United States. While the essence of the questions/problems presented in this text are of universal application, providing a broader selection of examples would be helpful. In Chapter 9, there is an erroneous perpetuation that conformal projections preserve the shape of the data. Conformal projections do no such thing, and nowhere in the text is there any mention of conformal projections preserving angular relations.

Now discussion turns toward my main point of contention. The book's organization seems to have begun with a series of common coordinate systems questions/problems that were collected by the author (based on her years experience with Esri support services). This is a novel approach. However, those questions/problems were then subjugated to more conventional chapter titles and the essence of easily finding solutions to these

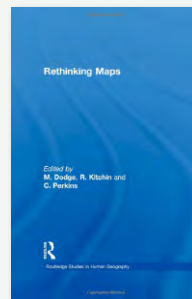
common questions/problems becomes problematic. For instance, the first chapter's title is "Identifying the Type of Coordinate System for Data using ArcMap." Compare this title to the questions that formulated the fodder for this chapter: "... when I add the data I get an error message that says 'missing spatial reference'...", and "... I get a Warning box that says 'Inconsistent extent'...". Connecting these questions to the chapter title might seem a bit of a leap for a neophyte. While the intent was to use common coordinate system questions/problems to formulate each chapter, the present arrangement does not really benefit those who are novices about coordinate systems. For instance, assume a GIS user notices that a specific data set appears to be consistently shifted in one direction. The novice wouldn't necessarily know a datum transformation was needed. Looking through the Table of Contents, their question doesn't appear. They would then become even more frustrated in searching through the text trying to find an answer to this general question. Given the intended goal of providing practical solutions to coordinate system problems to coordinate system tyros, this chapter arrangement could be improved.

Using the basic question/problem idea as the foundation, several options for improving upon the organization and presentation of the book's material suggest themselves. First provide a succinct overview of datums, map projections, and grid systems. This material would build a foundational knowledgebase that is not tied to ArcGIS or any other software. Second, present an overview on how ArcGIS represents, stores, and handles coordinate systems. Third, organize coordinate system questions/problems into subjects having a common theme. In most cases, coordinate system problems deal with alignment themes (e.g., "my data do not align" or "when I load a spatial data set it doesn't appear on screen"). There are many different themes that could be developed, but each alignment theme would be organized according to what the GIS user would see on screen or would obtain through the Layer Properties window. An explanation as to why the problem occurred, why the situation is problematic in ArcGIS, how to conceptually understand the problem, and what practical remedies can be found in ArcGIS would accompany each theme. Fourth, a more comprehensive listing of (non-Esri tied) references should be provided that could guide the interested user to additional source material.

Despite the many color-rich pages of screen shots, callout boxes, and text, I left the book with mixed feelings about its worth and target audience. On the one hand, I could see the frustrated GIS analyst examining *Lining up Data* to learn how to identify a coordinate system based on the coordinate values shown in the Layer Properties window and how to perform some rudimentary trials on attempting to align their spatial data. On the other hand, if someone wanted to learn the foundational reasons as to why a particular spatial data set does not align one would be disappointed

with this text: this book does not educate you about coordinate systems. Rather, this book is designed as an overview of how to handle common coordinate system problems in the ArcGIS environment. In short, if you need a no-nonsense book that may help you identify and solve misalignment problems in ArcGIS, this would be worth a try. If you wish to delve deeper into the field of map projections, datums, and grid systems, then look elsewhere.

RETHINKING MAPS: NEW FRONTIERS IN CARTOGRAPHIC THEORY



Edited by: Martin Dodge, Rob Kitchin and Chris Perkins.

2009 Routledge. 272 pages, figures.
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Review by: Jörn Seemann, Universidade Regional do Cariri, Brazil

Maps are changing, and so are our ideas and conceptions about them. In the early 1990s, the British geographer David Rhind observed that cartographers "are too often a group open to new technologies, but closed to new concepts" (*Proceedings of the XV ICA Conference*, Bournemouth, 1991). With the emergence of new digital features such as "apps with maps," mashups, online mapping, and geodesign, human beings have been literally plugged into a completely different world of cartography that urges them to rethink the map.

This rethinking is exactly what the three British geographers Martin Dodge, Rob Kitchin, and Chris Perkins are proposing in this collection of 12 essays from various authors on "new frontiers in cartographic theory:" identify ideas and approaches that serve as a framework within which to rethink maps. In their introduction, the editors declare that their aim is to "demonstrate the vitality of present thinking and practices in cartography" (p. 2). The essays in the volume cover a wide range of topics and approaches, from philosophical musings and state-of-the-art reports to participatory methodologies and cultural map readings; approaches that underline how mapping and mapmaking are complex and diverse processes with a strong non-technical, socio-cultural dimension that researchers need to explore.

In chapter 2, Jeremy Crampton delves into a dense web of philosophy from Plato to Foucault in order to mull over the relationship between mapping, knowledge, and race. He analyzes his topic through the historical