

Foreword

About the Content

This book consists of a linked set of chapters which describe a number of aspects of modern cartography. It is possible to read these chapters as separate units, but it is recommended that the book is considered as one publication, which is worth reading through completely.

Activities related to International Map Year (IMY), as promoted by the International Cartographic Association and supported by the United Nations, are diverse in nature and can be directed towards a range of communities, from local groups to international organisations. Similarly, this book (considered as one of these activities) is written to appeal to a broad audience. As there are particular target groups for IMY – school children, the general public, professionals, and government employees and decision makers – it is expected that some chapters will have a stronger interest than others for each reader. This foreword describes each chapter and then suggests ways of reading the book.

Chapter 1 is a general purpose introduction to some of the basic principles of cartography, considering the different types of maps which can be produced along with some of the principles of map making. It also gives a brief overview of how map making developed in previous centuries – but the rest of the book will show that, whilst our heritage is important, maps today are very, very different to maps of the past.

The second chapter considers not the making of maps but their use. Their value as documents and images for a wide range of purposes is presented here. Maps are

used by a large number of individuals, communities, organisations, companies, and governments, in every society on our planet. The nature of maps is appealing, visually, but their main value is in their use for decision making, for navigation, for education, for recreation, for information and for a host of further applications.

Chapter 3 is a more complex description of the type of information that is used to make maps, and also looks at how such information can be managed. The influence of contemporary computing science, in the digital environment within which almost all maps are made today, is widespread. It includes the application of concepts of database management and consideration of how the structure of geographic information can be effectively translated into a graphic map.

The way in which maps are designed has a fundamental effect on how they are used, and how successful they are for the map reader to understand. Maps are graphical objects, whether produced on a computer screen or on a piece of paper, and it is their visual nature that appeals to those who like to look at maps, and those who use maps to help them make decisions. Chapter 4, therefore, looks at this important aspect relatively early on in this book. Covering obvious topics, such as the use of colours, and using words and text effectively on a map, this chapter also considers their layout of maps, their possible uses, and the relationship between the geospatial data and the graphic design of its representation. As always with design, it is by looking at actual examples that we can learn about what is effective and what doesn't work in a map: this chapter, therefore, has many illustrations.

One common type of map is the 'topographic map' – a general purpose map primarily showing the landscape and the environment in which we live and move about. This is the oldest type of map, so there is a brief history about such mapmaking at the end of Chapter 5. The main part of this chapter, however, is a straightforward description of the factors involved in topographic mapping – how to use symbols and present them in a legend, how to determine the scale of the data representation, and how to show the shape of the landscape on a map, through techniques of relief representation.

Chapter 6 also considers design elements: the concentration of this section is on thematic maps, maps which portray a specific topic (e.g. natural vegetation, population statistics, and economic data) on a base map which shows the location of the theme in geographic space. There is an enormous variety of such products and many examples of thematic maps are shown in this chapter. The following chapter, on Atlases, describes the nature of collections of maps and the notable characteristics of this method of presenting geospatial information, particularly appropriate for a classroom setting or as reference works for individual consultation.

The geospatial data which is brought together ('compiled') to help the production of maps needs to be assessed for a range of properties before the map can be created. It needs to be timely, appropriately scaled, and, most importantly, accurate. Such accuracy extends to the incorporation of correct and appropriate names. Chapter 8 therefore considers the factors involved in ensuring that the text on a map, particularly that text which attaches names to geographical features, is properly rendered.

Finally, in this section on map creation, the basic spatial framework of every map, its projection, is covered in significant detail, in Chapter 9. This chapter examines the mathematical nature of map projections, but also gives general advice on choosing which projection is most appropriate. It can therefore be read by those who are a bit nervous about mathematical data handling, as well as by those who wish to know the methods by which projections are calculated, and the resultant properties of map projections.

The next section of the book concentrates on the use of maps. One of the main aims of International Map Year is to show the extraordinarily wide range of human activity which can profitably and sensibly use maps. Map use therefore covers numerous possible areas of our everyday life. This part of the book identifies just a few typical examples of organisations and actions using maps. Firstly, the United Nations is examined, to give an indication of how an administrative organisation can use maps for information, for legislation, for operations, and for policy- and decision-making. Then, Chapters 11 and 12 concentrate on a fundamental map use task – navigation – showing how maps and specialist charts can be used to assist with navigation at sea, and then how one can use maps to navigate by foot on the land, notably in the sport of orienteering. The central role of maps in such activities is highlighted.

Maps can be presented in a variety of ways, and the next section of the book outlines the possible methods by which the graphical representation of the environment can be copied and disseminated. Printing of a map is the best way to create multiple, permanent copies of a portable product which can be used in a wide variety of circumstances. Chapter 13 describes printing

technology, whilst Chapter 14 covers the alternative to such output – concentrating instead on ‘temporary’ maps, which are the results of accessing geospatial information on the web, or on mobile devices. The restrictions and the extended possibilities of producing maps using such computer-based technologies are explored. Mobile phones, for example, have small screens which can limit the display of maps; but such devices can display maps which change in real-time and give animated representations of geospatial data.

The fundamental importance and rapidly changing nature of geospatial data in the 21st century, and its impact on the display and distribution of maps is looked at in Chapters 15 and 16. The adoption of standardised flow lines and conventional methods of handling geospatial data is no longer common: there is so much new geospatial data to collect and manipulate; there are so many new ways of doing so; and there is a widening scope for the operations involved in geospatial data management. One particular example, the use of a ‘crowd’ of interested individual amateur map makers to create reliable, extensive, geospatial databases and subsequent maps, is examined in depth in Chapter 17. Currently, much interest is directed to the ways in which those wishing to make their own maps can capture the data in the real world using readily available tools. This approach is a typical example of how mapping is broadening its community of makers and users.

The final section of the book describes how anyone interested in mapping can extend their education in the subject, either formally or informally. Chapter 18 shows the impact of new technologies on the mind-set of a contemporary cartographer, and later there are examples presented of how the subject is tackled in

schools, in colleges, and by individual learners. The possibilities of following courses, or just separate exercises, are presented. This Chapter will be continuously updated with new information.

How to use this book

It is expected that this book will appeal to those who are interested in examining the broad range of products which can be defined as ‘maps’. Thus, school children and the general public, who have a wish to find out what maps can do and how they communicate can profitably follow Chapters 1 and 2 initially. This will give you a sufficient overview of the nature of cartography and the power of maps.

If your wish is to go one step further and actually make your own map, then the practical examples in these chapters will give some ideas. The actual job of compiling data, thinking about map projection, then producing a paper map is followed through Chapters 3 (giving detail about the nature of geospatial data), 4 (the transformation of geospatial data into maps using design procedures), 8 (the handling of geographical names), 9 (the choice and application of an appropriate map projection), and 13 (the way in which maps can be duplicated and printed).

Contemporary methods of mapping using web-based technologies are covered in Chapter 14, although the concepts of accurate data handling outlined in Chapter 3, and expanded upon later in Chapters 15 and 16, still apply. The potential of mapmaking using ‘crowd-sourced’ technologies and systems is outlined in Chapter 17, and this can serve as a template for those wishing to explore such personalised map making themselves.

Administrators and professionals who have a particular interest in the accurate handling and representation of geospatial data should follow Chapters 3 (where data structures and database design are considered), and note the possibilities for mapping specific data types and themes described in Chapters 5, 6 and 7. It should be possible to correctly identify the most effective method of representing geospatial data on a map with reference to the examples given in these chapters, whilst the options available in terms of representing data layers can be understood—symbols, layout and content – can be determined from Chapter 4.

Using maps is the prime concern of those interested in recreational, administrative and scientific applications of geospatial information. Chapters 10, 11, and 12 will be particularly appropriate for those in government, in education, in navigation and in sport, who have the job of communicating geospatial data effectively and using maps in critical situations.

Chapter 17 is intended to give advice to young people about how to proceed with an educational programme and a possible future career in cartography. This chapter can be read by itself: it contains a few example exercises to show school children who may not have been exposed to the subject in depth at school, that this is an interesting and worthwhile route to employment in an exciting discipline. Chapter 18 is intended to give further reading tips and is intended to be updated.

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