General Introduction

In the first volume of this book on thematic cartography we established the essential elements of making a map and advocated the concept of transformation, introduced by W. Tobler [TOB 61]. A map is thought of as a result of a transformation process. The cartographic reasoning associated with this idea can be adapted for the production of any type of map, regardless of its aim or the study phase for which a given map is intended. In order to be able to make the necessary decisions, a cartographer needs to keep in mind all the different stages of the mapmaking process.

Nevertheless, only those transformations that are indispensable in making a map were described and explained previously. We now turn to the more inventive transformations, to which the second volume is devoted. This volume consists of two large parts, and aims to show the contributions of different manners of processing the attributes, and those representations which are difficult to create without the help of a computer.

The first part concerns the stage T2b, which was not discussed in the first volume of this book. Thus, in this part we address the processing of the attributes *[Z]* and the role of quantitative methods in cartography. Indeed, whilst for a long time cartographers have been superimposing and juxtaposing variables (often making the maps illegible), the inclusion of statistical tools in order to process data before representing them produced a fundamental revolution in the discipline. From now on, maps visualize the results of data processing, which summarize the available information or stress a particular feature of the studied phenomenon. Depending on the phase in the study for which the map is required, and also depending on whether the map is needed for a preliminary exploration or for a verification of a proposed assumption, the data processing can be very basic or very complex. It ranges from simple structuring of a single variable to combining *k*

variables or creating a model, which may or may not incorporate the geographic space explicitly.

The second part puts forward the transformations connecting the coordinates *[XYZ]*. The principles of these transformations have been known for a long time, but their application was difficult, if not impossible, without a computer. This part examines the techniques which were long known but later renewed thanks to the computing revolution. These include cartographic transformations of position on the one hand, and 3D representations on the other. The former are more often encountered under the name of anamorphosis. These are original models, often revealing the underlying structure, which is not visible directly. The latter (3D representations) are characterized by the presence of a variable which is expressed vertically. These representations comprise several distinct categories with different meanings: 2.5D, 3D and virtual reality.

It is certain that this second volume will leave unanswered some questions about the future and the new opportunities in cartography. Therefore, the goal of the last volume will be to describe the contributions of new technologies. Although cartographers should always be open to these, it is important to judge them critically in order not to end up with aberrant maps and not to make ill-advised decisions.