stances so that it is not only explored and presented but in fact created through this process. While this course is not limited to qualitative research, experienced scholars of qualitative methods are habitually more aware than others of the intersection of the research setting and their own circumstances. An excellent instance of the power of the researcher's circumstances is conveyed by the personal account of Deborah Martin (which is typical of her generation) who sought to learn, to be trained and specialized and also to teach qualitative geography. Her discussion of the tension between the theoretical facets of qualitative methods and the students' inclination toward the more practical facets – the "how" – of qualitative research, is insightful and useful for those who teach qualitative research methods and, I believe, also for students. Indeed, this chapter which illuminates issues in geographical education and concerns the quality of future research offers a fine closure to this valuable collection.

The SAGE Handbook of Qualitative Geography is more about the way geographers conduct their research than about the intriguing geographies they unveil. It demystifies the complexities that surround qualitative work in the field and is an important addition on the shelves of geography books. This timely publication is indicative of the maturity of qualitative research within the community of geographers. By assembling the work of leading geographers who have chosen qualitative methods as a key means to accomplish their research, this volume also forwards dialogue between geographers and their colleagues in the humanities and other social sciences. It is a high-level, interesting and well-read book that will benefit graduates students, academics and practitioners. It is highly recommended for scholars in the various fields of human geography.

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THE SAGE HANDBOOK OF REMOTE SENSING, by Timothy A. Warner, M. Duane Nellis and Giles M. Foody. London: Sage Publications, 2009.

Remote sensing may be defined as the process of collecting data about objects, areas, or phenomena through observing them without physical contact. The first remote sensing data were collected over one hundred years ago, but the use of spa-

ceborne sensors for remote sensing began only fifty years ago. Today, remote sensing plays an essential role in collecting geospatial information; digital sensors are being installed aboard airplanes, satellites and space shuttles, and the images acquired are converted into information by a powerful network of computer systems allowing, at times, real-time decisions to be made. These methods can be used for harvesting spatial information regarding the earth, the atmosphere and also other planets in the solar system. The use of remote sensing methods is applied extensively in a wide range of study fields, some of the main ones are geography, agriculture, forestry, geology, meteorology, hydrology, oceanography, geo-physics as well as environmental management.

The Sage Handbook of Remote Sensing provides a new and updated description of the various methods and technological systems used for remote sensing, harvesting and processing of data. In addition to the physical and engineering background of remote sensing, the handbook contains a useful description of the various applications and research opportunities based on remote sensing. Remote sensing methods are multidisciplinary, thus the chapters are written by researchers and scientists of different scientific backgrounds and disciplines. This book covers mainly topics of data collection, data processing, geophysical interpretation of the processed data and application of remote sensing methods. It contains five sections and conclusions. Beside the introduction and conclusion, all the four sections are divided into a total of 34 subsections or chapters.

The first section provides a short introduction to the fundamental characteristics of remote sensing from an informational and data handling points of view. The first chapter begins with a description of remote sensing data, systems and information in terms of different resolution types for use in different types of applications and general usage. The second chapter covers primarily the description of data sharing and distribution policy. In addition, it also provides description of the various categories of data distribution for the various applications such as for educational and commercial purposes.

In section 2, the book describes the issue of interaction between electromagnetic radiation and the terrestrial environment. The discussion is done primarily from a quality point of view and with some additional empirical information about the interaction. This section is arranged in four parts as categorized in remote sensing methods and in classifications of sensors—optic and near infrared, middle infrared, thermal infrared and microwave remote sensing. Chapter 3 provides the treatment of electromagnetic radiation in the range of 0.4 to 2.5 micrometers (optical and near infrared spectrum). The discussion adds information about the different sensor spectral bands and some empirical data on spectral signatures of different kinds of vegetation and minerals. The fourth and fifth chapters cover the two other spectral domains, the middle infrared (from about 3 to 5 micrometers) and the thermal infrared (from about 7 to 15 micrometres). This section closes with chapter 6, which covers the interaction of microwave radiation with vegetated terrain. In this chapter

the issue of remote sensing is covered from a scattering model of the vegetation and the ground layers. Various empirical results of radiation scattering from various targets under some experimental parameters are shown and discussed.

Section 3 deals with the fundamental topic of remote sensing, the digital sensors and the issue of image characteristics. Chapter 7 opens with the description of different types of optical sensors and some fundamental description of images, such as resolution, radiometric calibration, noise phenomena and more. Chapters 8-10 provide description for optical systems with different spatial resolutions. The treatment begins with the definition of resolution scales and some of its historical development. The chapters also provide summery for past and existing remote sensing systems and their main parameters. A description of multispectral images and systems is provided in chapters 11-12. Chapter 11 covers the multispectral sensors and system structure while chapter 12 is dedicated to principles of spectrometer imaging and presentation of the different ways for creating a three dimensional data cube (multispectral images). The first chapters in this section describe sensors for passive optical and infrared radiation; the two last chapters (13-14) of this section describe active sensors, the SAR and the ALS systems. Chapter 13 contains an up to date description of the past and existing satellite SAR sensors. It also provides description for the image formation and system limitation. In addition, the method of polarimetric SAR and SAR interferometry is described. At the end of this chapter a short presentation of passive microwaves sensor is provided. The last chapter describes the Airborne Laser Scanning (ALS), showing the ALS working principle and the processing stages.

Section 4 (chapters 15-21) covers the main issue of this field, that of the very analysis of remote sensing data. The first three chapters provide a description of the relationship between the physical reflectivity of the target and sensor digital measurements. Chapter 15 in this section provides an extensive description of the different reflection definitions. Emphasis is laid on the sensor target and illumination source geometry. Chapters 16 and 17 provide a description of the sensor and the target characteristics from a measurement value point of view. In contrast with those chapters that dealt with data measurement values, the next three deal with the actual remote sensing data. Chapters 18-19 describe the relationships between the acquired remote sensing data and GIS systems, the former dealing with integration of the data into GIS systems and the latter with the different ways, methods and performance of the classified acquired image. Each classificatory principle is accompanied by its main equation's direct quality discussion and by comparison to the other methods. The section ends with chapter 21, which provides information about accuracy and validity of the process in terms of the various products.

Section five provides a broad overview of the applications of remote sensing data. It consists of the following four subsections: lithospheric science, planetary science, hydrospheric and cryospheric sciences and a subsection devoted to global changes. The first subsection (chapters 22, 23, 24), opens with the application of position

measurements in a three dimensional space. The next two chapters deal with geological and soil applications. This subsection is mainly based on data acquired by active microwave and passive optical and infrared sensors. The second subsection (chapters 25, 26) deals with studies of vegetation conditions and agriculture. The next subsection (chapters 27 and 28) is dedicated to the issue of hydrospheric application and also cryospheric application. Chapter 27 provides an overview of oceanic remote sensing in terms of multispectral optical sensors. Chapter 28 deals with remote sensing of objects made of solid water form, i.e. ice, snow, river and lake ice, glaciers and more. In this chapter empirical graphs for ice and snow spectral properties are provided.

The last subsection is saved for environmental changes due to human activities and the high priority issue of tracking global change. This subsection consists of four chapters (29-33), the first one dealing with remote sensing for terrestrial biogeochemical modeling. The next two chapters focus on applications of remote sensing for urban areas and social sciences. Chapter 32 describes cases of disaster management. The last chapter in this section deals with remote sensing for land surface changes and the methods for change analysis.

This volume covers all the main fields of remote sensing in a very comprehendible manner. Most of the chapters are presented in a semi-historic account that shows the development of the field or in methods of data processing. The discussion is accompanied by high-quality color images and graphs in order to provide as full coverage of the topics as possible. The structure of the book is organized very systematically into sections, sub-sections and chapters. It may thus be used as a text book in various courses of remote sensing or as a book for independent learning in advanced studies. The target audiences are students and researchers from different fields such as geography, geology, and the natural and engineering science. In addition to the data about different sensors a full and complete reference list is attached to each chapter in a detailed way, whereby some of the graphs and tables also provide a link to their internet website. This kind of detailed reference is a very powerful tool for an in-depth review of the material. The main focus of this book is on the optical and infrared spectrum (and multi spectral), whereas the issues of radar remote sensing is given less space. As radar remote sensing tools are presently taking a growing interest path, we were hoping to find more relevant discussion.

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