auto-regressive time dependence. Autologistic and latent variable specifications are also described, and the final section has some appealing spatial implementations of compartmental models of infection dynamics.

The book has relatively few errors: mostly minor typographical mistakes. It was sometimes frustratingly difficult to cross-reference the relevant appendix code from the main text. Overall, though, I recommend the book. It taught me new ideas and clarified existing ones. I shall continue to use it and I expect it to be useful for other statisticians with an interest in spatial analysis.

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Statistical Methods for Estimating Petroleum Resources
P.-J. Lee, 2008
Oxford, Oxford University Press
xxii + 234 pp., $125.00
ISBN 978-0-195-33190-5

Given the importance of petroleum resources it is not surprising that their extraction has deployed significant statistical effort. This ranges from the prediction of global and national peak oil production to geostatistical characterization of single reservoirs. This book is concerned with the analysis of existing data on the sizes of known single reservoirs within a given region to estimate that region's total resource potential. The book is primarily concerned with the suite of methods for resource estimation that comprises the late P.-J. Lee's PETRIMES software.

Chapter 2 introduces basic concepts, chiefly the *play*. A play is a set of petroleum deposits or *pools* which can be treated as a single population because they were deposited under comparable geological conditions. The novice reader must work hard to extract this definition, but it is critical to what follows because the methods in PETRIMES are geared to characterizing single plays. Quantities such as the sizes of individual pools within a play, or the number of pools, are treated as random variables. The data that are available for a play are the sizes of the individual pools so far discovered, and the order in which they were discovered. It is assumed that these data arise from non-random sampling according to a *discovery process model* such that, for example, the larger pools are expected to be discovered earlier in the sequence. Two approaches are taken to the estimation of the volume of undiscovered resources. In the first the play under investigation is regarded as a sample drawn from a superpopulation. This is what PETRIMES does. Alternatively the pools in the play can be treated as a finite population without proposing an underlying model.

Chapter 3 delves into the methods in greater detail, focusing on *mature* plays, i.e. plays in which sufficient pools have been discovered to provide data for the application of discovery process models. The estimation of superpopulation models for pool size and, from these, directly useful estimates of the total resources of the play are described. Chapter 4 explores a wider range of models, and Chapter 5 outlines approaches that are used for unexplored or partially explored plays. Chapter 6 sets the methodology in the context of the overall process of assessing the resources of a region; then Chapter 7 reviews approaches outside the scope of PETRIMES.

The statistical reader will complain about some of the terminology and notation, but I found the intimate mix of statistics with geology intriguing. For statisticians who are involved with this, or analogous problems in resource estimation, it will be invaluable.

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Introduction to Spatial Econometrics
J. LeSage and R. K. Pace, 2009
Boca Raton, CRC Press
xiv + 354 pp., $89.95
ISBN 978-1-420-06424-7

Since the seminal and influential book of Anselin (1988) there has not been a comprehensive treatment of spatial econometric models. Without any doubt, the book by LeSage and Pace is a welcome addition to the spatial econometrics literature and will surely be a compulsory reference in this field. Although some good books on spatial statistics have come up in recent years, none of them is as specific as this one. An interesting but much shorter contribution by the same authors appeared in the updated *Handbook of Spatial Statistics*, an interesting reference edited by Gelfand *et al.* (2010).

The text is structured in 10 chapters. The introductory chapter deals with a brief treatment of spatial dependence and spatial auto-regressive processes, including a discussion of the spatial weight matrices that play an important role in