

# Short Book Reviews



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Editor Dr. A.M. Herzberg

## EDITORIAL

I have come to the end of my watch. Over twenty-six years ago in July 1980, *Short Book Reviews* pulled away from its mother ship, the *International Statistical Review*, to sail on its own in uncharted waters. After twenty-six years, *Short Book Reviews* will now return from its voyage to dock again at the *International Statistical Review* and come under the command of a new captain. It is time for this editor to relinquish the red pencil. During these years, *Short Book Reviews* has handled almost 12,500 books. It is a wonder the craft did not sink!

In the fall of 1979, to ensure that the International Statistical Institute continued to have a book review service, Professor Sir David Cox suggested a separate publication. The Publications Committee approved this and invited me to be the Editor of *Short Book Reviews*.

In the years since, I have met many interesting people and have had some amusing incidents. In 1984, someone, whom I did not know, came to Imperial College with a book review for me. I had never seen or heard of the book he had reviewed. I explained how the reviews were obtained; the publishers sent their books to me and I decided to whom the book should be sent. I ended by saying "You may even be the author's best friend." The reply came "As a matter of fact, I am!" For years over lunch at Imperial College, a favourite topic for discussion was often whether or not *Short Book Reviews* should be *Short-Book Reviews* or *Short Book-Reviews*.

Mrs. J. Fullard, one of the first typists for *Short Book Reviews* and perhaps the longest surviving, was from Zimbabwe and taught me that when things did not go quite right one should say: "Don't panic mechanic! There is no malaria in the area."

The first book arrived in July, 1980; it was *The Statistical Analysis of Failure Time Data* by J.D. Kalbfleisch and R. Prentice. The number of reviewers is 497, while the number of reviews is 2,548. This does not mean that each reviewer did five reviews! Two hundred and seventy-six did only one review. Others did any number from two to one hundred and forty-six. I am extremely grateful to them all. The leaders are: D.J. Hand 146, P.A.L. Embrechts 129, N.R. Draper 93, N.D.C. Veraverbeke 77, S. Powell 59. Some notable contributors have included G.A. Barnard, D.R. Cox, E.L. Lehmann, F. Mosteller and F. Yates. Approximately five books have failed to have a review returned; not a bad record, I think.

I feel that I have been able to find excellent reviewers. As E.B. White has said, "The editor is a person who knows more about writing than writers do but has escaped the terrible desire to write." This confirms my impression that I was better at finding reviewers than in actually reviewing books.

Sydney Smith is supposed to have said: "I never read a book before reviewing it. It prejudices me so." None of my reviewers were so inclined, I think.

Contrary to some opinions, all reviews were not full of praise. On one occasion, a fiery letter came from an author who demanded equal space unless the reviewer could substantiate the statements made. Several times I wrote to publishers that reviews would appear on a certain date to give them a chance of rebuttal. None of the publishers ever wrote back. One reviewer who had thought that one author was poisonous was asked to tone his review down. The reviewer agreed but said he still believed it. In spite of these incidents many publishers have used the reviews in their advertisements.

The reason for the Notes Section was that some books were not reviewable but something could and ought to be said that was more than just a listing. Also it enabled books of more general interest to be brought to the readers' attention. Many times, *Short Book Reviews* anticipated *Science*, a weekly journal, in listing books received.

Overall, *Short Book Reviews* has been fun for me. I have learned a lot and every day the arrival and opening of parcels of books has given me the excitement I had as a child on Christmas morning.

*Short Book Reviews* has also kept me up-to-date with the literature, introduced me to new friends and colleagues and enabled me to keep in touch with many. Perhaps some authors were not entirely happy with their reviews but, as with the theatre, a bad review does not stop the public from going to a performance or from buying the book.

Many have said that *Short Book Reviews* helped and inspired them. Professor W.J. Krzanowski wrote in 1988 concerning the conception of his book *Principles of Multivariate Analysis*: "The germ of the idea for it was planted by Agnes Herzberg who by supplying me with a constant stream of books for review in the *ISI Short Book Reviews* made me aware of a potential need for a book aimed at a multivariate 'user'."

There are some individuals, out of the multitude of those who were associated with *Short Book Reviews*, I would like specially to thank. Professor Sir David Cox and Professor Paul Embrechts were always on hand to suggest reviewers. I want to thank all the Directors of the International Statistical Institute over the twenty-six years and, in particular, the late Dr. B. Lunenberg whose humour and good nature helped to set *Short Book Reviews* on its course. Mrs. A. Lepping at the International Statistical Institute office charted the journey almost to the end.

None of this would have been possible without the support of two academic institutions: Imperial College

of Science, Technology and Medicine in London; and, since 1988, also Queen's University, Kingston, Canada.

And so to Professor David Bellhouse, the new Editor, I say "Bon Voyage" and, to those who have supported *Short Book Reviews*, its reviewers, readers and the publishers, I say *Ave atque vale* or "Hail and Farewell".

I have enjoyed the voyage.

Agnes M. Herzberg  
November 30, 2006

## REVIEWS

SELECTED PAPERS OF FREDERICK MOSTELLER.

S.E. Fienberg and D.C. Hoaglin (Eds.).  
New York: Springer-Verlag, 2006, pp. x + 660,  
US\$74.95.

## Contents:

1. Frederick Mosteller—A brief biography
2. Bibliography
3. 40 selected papers

Readership: Statisticians and others

After a truly extraordinary career, Frederick Mosteller passed away earlier this year at the age of 89. During more than fifty years as a faculty member at Harvard, he chaired four different departments, founded the Statistics Department, taught and advised countless students and faculty, wrote numerous textbooks, and conducted research in a wide range of areas. Professor Mosteller was also very active in statistical societies, government committees, the National Academy of Science, the American Academy of Arts and Sciences, and the American Association for the Advancement of Science, and held leadership positions in each. He was president of the International Statistical Institute from 1991-1993. To those that were fortunate enough to know him personally, he was a wonderful mentor and role model.

The contents of this volume were selected to illustrate Mosteller's broad range of research interests, and include papers on statistical methodology, applications in law, policy, medicine, education and ethics. For example, one paper examines a probabilistic basis for addressing causation and compensation for persons who experienced a particular disease and had previous exposure to a known causative agent. Others include such diverse topics as reporting results of clinical trials in surgical journals, methods for studying coincidences, statistics and ethics, an empirical study of the distribution of prime numbers, statistical aspects of the World Series (baseball), classroom and platform performance, and statistical methods for public policy.

By selecting such a wide range of topics, the Editors provide an excellent source of information on many interesting statistical issues, and a valuable reminder of the value of statistical thinking to a wide variety of important problems.

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S.W. Lagakos

UNDERSTANDING UNCERTAINTY.

D.V. Lindley.  
Hoboken, New Jersey: Wiley, 2006,  
pp. xv + 250, £35.50.

## Contents:

- Prologue
1. Uncertainty
  2. Stylistic questions
  3. Probability
  4. Two events
  5. The rules of probability
  6. Bayes rule
  7. Measuring uncertainty
  8. Three events
  9. Variation
  10. Decision analysis
  11. Science
  12. Examples
  13. Probability assessment
- Epilogue

Readership: The blurb on the back of the book says this book is 'useful as a text for all students who have probability or statistics as part of their course, even at the most introductory level'. While this is true, it is also suitable for the much wider readership referred to in the preface: 'for the layman, for you, for everyone, because all of us are surrounded by uncertainty.'

This is a book about 'personal' probability, that interpretation which holds that probability is not an objective property of the world, but rather an individual's degree of belief that an event will occur. Professor Lindley, of course, is one of the founders of the modern theory, and in this book has attempted a non-technical and informal introduction to the ideas and applications. The book is wonderfully accessible, and is indeed a pleasure to read. It is full of examples, relating the technical issues under discussion to real issues in everyday life. I strongly recommend it as background reading for all students of probability and statistics (although perhaps statistics students should also read D.R. Cox's recent *Principles of Statistical Inference* [[Short Book Reviews](#), Vol. 26, p. 39]).

The level of mathematics is truly minimal, and I would like to believe that all modern university students, of whatever discipline, could cope with it. I am certain that they would all benefit from reading it. And I am equally certain that lawyers, politicians, scientists and journalists (the list the author gives in his preface) would likewise benefit. Oh, and fuzzy set theorists.

Imperial College of Science,  
Technology and Medicine  
London, U.K.

D.J. Hand

PRINCIPLES OF STATISTICAL INFERENCE.

D.R. Cox.  
Cambridge University Press, 2006,  
pp. xv + 219, £45.00/US\$80.00 Cloth;  
£19.99/US\$34.95 Paper.

## Contents:

1. Preliminaries
2. Some concepts and simple applications
3. Significance tests
4. More complicated situations
5. Interpretations of uncertainty
6. Asymptotic theory
7. Further aspects of maximum likelihood
8. Additional objectives
9. Randomization-based analysis

APPENDIX A: A Brief History  
APPENDIX B: A Personal View

Readership: Students of statistical inference, statisticians

This book grew from lectures to doctoral students at Chalmers/Gothenburg University. It retains much of the spirit and the economical style of a lecture series. A frequentist approach to inference is described, with many interesting examples and asides, and at each stage, the corresponding Bayesian techniques are presented for comparison. The book does not dwell on the formal principles of inference enunciated by Birnbaum and others in the 1960s — the sufficiency principle, the likelihood principle, the conditionality principle — but it is very much concerned with the frequentist-Bayesian dialogue, and the differences between inference and decision. On one level, it is a very useful and interesting introduction to statistical theory. On

another level, it is a welcome personal statement by one of the foremost contributors to the foundations of inference.

In fact, in the development, principles of a prescriptive nature are kept to very few: (i) with parametric models, "a preference for sufficiency"; (ii) conditioning where it is clearly appropriate; (iii) and rejection of methods "that in repeated application would mostly give misleading answers". Such principles restrict both frequentist and Bayesian inference, but still leave ample room for differing perspectives.

There is something of a sense that formal systems of statistical inference could be regarded as testable models of reasoning under uncertainty. The validation of a particular approach is the viability of its results. "Some assurance of being somewhere near the truth takes precedence over internal consistency". Confidence intervals and tests of significance are the preferred expressions of inference at least partly because of their wide currency. The value of a much used non-likelihood method in a particular parametric problem may lie in its transparency.

In one way or another the book offers guidance through or signposts toward most modern developments in statistical inference. The treatments of asymptotic theory and of modified likelihood are especially to be recommended for their clarity and scope.

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M.E. Thompson

#### INFORMATION GENERATION.

How Data Rule Our World.  
D.J. Hand.  
Oxford: Oneworld, 2006,  
pp. x + 246, £16.99/US\$25.95.

#### Contents:

1. Let there be light
  2. The origins of data
  3. A lever to move the world
  4. Big Brother's eyes
  5. Modern data science
  6. In data we trust
  7. Deception and dishonesty with data
- Epilogue: The beginning

Readership: Anyone interested in the history of scientific thought and data generation

The first three chapters in this book provide a history of science and the scientific method, and the history of the collection of data. Chapter 4 tells of the alarming situation of big brother's eye watching one. Chapter 5 discusses the analysis of data, whereas Chapter 6 discusses the trustworthiness of the data and sometimes the bad quality of the data and the problem of missing data. Is bad data better than no data at all? Chapter 7 shows the possibilities of lying with data. In the epilogue, Professor Hand notes "Data, in fact, form the very basis of modern civilization. The old and familiar aphorism says that 'knowledge is power', but that knowledge is built from data, and it is that knowledge, constructed from the basic building blocks of data, which has enabled our civilization to progress to its current state."

The book is very absorbing and informative. The text is enlivened by anecdotes such as that of Sir Isaac Newton, who lectured to an empty lecture theatre to fulfil his teaching obligations. An analogy with Jeremy Bentham's panopticon, used originally as a surveillance device at prisons, is that everyone is now being watched by an extended panopticon, with closed circuit TV cameras, enhancing one's safety, perhaps.

Professor Hand writes of data and information generation. Medical records are a necessity, but is it an infringement of one's privacy when records of one's purchases are used by many.

The book provides a very good read, either to read all the way through or to dabble into; it shows how one must be constantly vigilant. Although Professor Hand writes about the collection and analysis of data, many will be grateful that there are no equations and only eleven figures! One missing item is a discussion of the flaws in the now ubiquitous self-selected surveys.

John Dryden's quotation "Errors, like straws, upon the surface flow. He who would search for pearls must dive below." summarizes this interesting volume. And Professor Alison Wolf is correct in her pre-publication review when she says: "A really excellent book, full of interest whether you are a statistician, a student or a lay person aware of living in a world awash with data."

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A.M. Herzberg

#### GRAPHICS OF LARGE DATASETS: VISUALIZING A MILLION.

A. Unwin, M. Theus and H. Hofmann.  
New York: Springer-Verlag, 2006,  
pp. xiii + 271, US\$84.95.

#### Contents:

1. Introduction
2. Statistical graphics
3. Scaling up graphics
4. Interacting with graphics
5. Multivariate categorical data-mosaic plots
6. Rotating plots
7. Multivariate continuous data-parallel coordinates
8. Networks
9. Trees
10. Graphics of a large dataset

Readership: Anyone interested in statistical computing and exploratory data analysis

This fascinating book looks at the question of visualizing large datasets from many different perspectives. Different authors are responsible for different chapters and this approach works well in giving the reader alternative viewpoints of the same problem. Interestingly the authors have cleverly chosen a definition of 'large dataset'. Essentially they focus on datasets with the order of a million cases. As the authors point out there are now many examples of much larger datasets but by limiting to ones that can be loaded in their entirety in standard statistical software they end up with a book that has great utility to the practitioner rather than just the theorist. Another very attractive feature of the book is the many colour plates, showing clearly what can now routinely be seen on the computer screen. The interactive nature of data analysis with large datasets is hard to reproduce in a book but the authors make an excellent attempt to do just this.

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P. Marriott

#### STATISTICAL EVIDENCE IN MEDICAL TRIALS: WHAT DO THE DATA REALLY TELL US?

S.D. Simon.  
Oxford University Press,  
2006, pp. xvii + 197, £65.00.

#### Contents:

1. Apples or oranges? Selection of the control group
2. Who was left out? Exclusions, refusals, and drop-outs
3. Mountain or molehill? The clinical importance of the results
4. What do the other witnesses say? Corroborating evidence
5. Do the pieces fit together? Systematic overviews and meta-analyses

6. What do all these numbers mean?
7. Where is the evidence? Searching for information

Readership: Health care professionals and statisticians who want to communicate with them

The author indicates that this book is written for "any health care professional who is making the effort to read and evaluate medical publications". He also says he "did not write the book to teach you how to conduct good research" and that the things he is proud of in the book are "Extensive use of real world examples", "Focus on statistical issues", "Avoidance of formulas and technical language" and "Presentation of counterpoints". The book is based on experience since 1997 in communicating how journal articles should be read and clearly benefits from an extensive electronic resource built up by the author.

The book succeeds very well in providing an interesting and informative introduction to the proper assessment of published medical research. The use of stories and anecdotes, some of long-standing use in this area, is effectively employed. One can raise minor quibbles such as in the mention of "number needed to harm" on page 56 before it is actually defined on page 125, or what appears to be the selective reporting of studies that made comparisons of observational and randomized studies of the same topic when presenting the counterpoint view that "Randomized trials are overrated." And, I think the word "studies" could have replaced "trials" in the title. Overall, however, this book provides an excellent way into assessment of the medical literature and covers the topics that should be covered. And while it may not be definitive, it is certainly eminently readable.

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V.T. Farewell

#### STATISTICAL MONITORING OF CLINICAL TRIALS: A UNIFIED APPROACH.

M.A. Proschan, K.K.G. Lan and J.T. Wittes.  
New York: Springer-Verlag, 2006,  
pp. xii + 258, US\$79.95.

Contents:

1. Introduction
2. General framework
3. Power: Conditional, unconditional, and predictive
4. Historical monitoring boundaries
5. Spending functions
6. Practical survival monitoring
7. Inference following a group-sequential trial
8. Options when Brownian motion does not hold
9. Monitoring for safety
10. Bayesian monitoring
11. Adaptive sample size methods
12. Topics not covered

Readership: Biostatisticians and statisticians involved in clinical trials

This book provides a detailed account of statistical methods for the interim monitoring of randomized comparative clinical trials. Traditional methods are covered in depth, and the text also includes brief discussions of safety monitoring and Bayesian monitoring, though monitoring using repeated confidence intervals and adaptive monitoring are not included as topics. A summary of available group sequential software is provided in an appendix. The extensive practical experience of the authors is reflected in the presentation of much of the material. This book would provide a valuable source of information for statisticians wishing to learn more about issues and methods for the interim monitoring of clinical trials.

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S.W. Lagakos

#### INTRODUCTION TO RANDOMIZED CONTROLLED CLINICAL TRIALS, 2nd edition.

J.N.S. Matthews.

Boca Raton, Florida: Chapman and Hall/CRC Press,  
2006, pp. xviii + 283, US\$59.95/£34.99.

[Original 2000; Short Book Reviews, Vol. 20, p. 43]

Contents:

1. What is a randomized controlled trial?
2. Bias
3. How many patients do I need?
4. Methods of allocation
5. Assessment, blinding and placebos
6. Analysis of results
7. Further analysis: Binary and survival data
8. Monitoring accumulating data
9. Subgroups and multiple outcomes
10. Protocols and protocol deviations
11. Some special designs: Crossovers, equivalence, and clusters
12. Meta-analyses of clinical trials

Readership: Undergraduate and postgraduate students of statistics

Over recent decades randomized controlled clinical trials have become established as the method used to assess new medical treatments if any claims of the efficacy of a treatment are to find widespread acceptance. The author has revised and updated his first edition of this readable book by incorporating additional material pertaining to methods for balancing treatment allocations: together with the inclusion of a new chapter dealing with the analyses of clinical trials with binary outcomes and survival times. This revision continues to provide an introduction to the statistical methodology that underpins the randomized controlled trial and I recommend its inclusion in the reading list of any statistician wishing to attain a well-rounded education in the application of statistics. Administrative aspects of running a trial still receive little emphasis in the text but there are many excellent books on clinical trial methodology that may be consulted. The text assumes no underlying medical background, and is well written and easy to read.

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C.M. O'Brien

#### RANDOMIZATION, BOOTSTRAP AND MONTE CARLO METHODS IN BIOLOGY, 3rd edition.

B.F.J. Manly.

Boca Raton, Florida: Chapman and Hall/CRC Press,  
2007, pp. xvii + 455, US\$79.95/£39.99.

[Original 1991; Short Book Reviews, Vol. 11, p. 4;  
2nd edition 1997]

Contents:

1. Randomization
2. The jackknife
3. The bootstrap
4. Monte Carlo methods
5. Some general considerations
6. One- and two-sample tests
7. Analysis of variance
8. Regression analysis
9. Distance matrices and spatial data
10. Other analyses on spatial data
11. Time series
12. Multivariate data
13. Survival and growth data
14. Nonstandard situations
15. Bayesian methods
16. Final comments

Readership: Postgraduate students and researchers of biometry, biostatistics, medicine and statistics

This is the third edition of the author's well-known, and popular, text on computer-intensive methods. In the second edition, a new chapter had been included on bootstrapping and the word bootstrap had been added to the title. However, is a third edition really warranted? The text has been extensively updated with the results of recent research but the emphasis remains firmly on biological applications. Substantial changes have been made to the chapters on regression and time series analyses. There is much to interest the general reader of statistical methodology and in particular, those interested in controversial topics for which statistical insight may be enlightening. The text is easy to read and contains many references which will facilitate private study, research and motivate further scientific investigation. I spent an interesting morning tracing references on superposed epoch analysis - a technique that appears to have many potential uses and is certainly worthy of wider use!

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C.M. O'Brien

THE STATISTICAL ANALYSIS OF INTERVAL-CENSORED FAILURE TIME DATA.

J. Sun.

New York: Springer-Verlag,  
2006, pp. xv + 302, US\$79.95.

Contents:

1. Introduction
2. Inference for parametric models and imputation approaches
3. Nonparametric maximum likelihood estimation
4. Comparison of survival functions
5. Regression analysis of current status data
6. Regression analysis of Case II interval-censored data
7. Analysis of bivariate interval-censored data
8. Analysis of doubly censored data
9. Analysis of panel count data
10. Other topics

APPENDIX: Some Sets of Data

Readership: Mathematical statisticians, biostatisticians

Interval-censored data, where one does not observe the exact times of events of interest, for example HIV seroconversion, but only that they occur in certain intervals defined in this case by patient visits to the physician, occur commonly in biostatistical practice. When, as is often the situation, these intervals are irregularly spaced and differ among patients, the usual methods for the analysis of complete data or right-censored survival data do not apply. This is the first book to summarize the substantial body of recent work in this field. It has something of the flavour of a lengthy review article. The reader is referred to the cited papers for detailed derivations and proofs, especially regarding the asymptotic theory, which is nonstandard. The book includes a number of applications, with full sets of data provided. Algorithms for fitting the various models presented are described carefully in the text and there is a short section discussing available statistical software, but detailed programs are not given. A frequentist approach is adopted throughout except for one short section on Bayesian methods. Those unfamiliar with concepts such as multiple imputation, sieve estimation, the EM algorithm and kernel smoothing may need to do some additional background reading on these topics. Although standard survival analysis methodology is reviewed briefly in the early chapters, the book will be of most benefit to those who have already mastered these techniques.

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D. Oakes

RANDOM FRAGMENTATION AND COAGULATION PROCESSES.

J. Bertoin.

Cambridge University Press,  
2006, pp. vii + 280, £35.00.

Contents:

Introduction

1. Self-similar fragmentation chains
2. Random partitions
3. Exchangeable fragmentations
4. Exchangeable coalescents
5. Asymptotic regimes in stochastic coalescence

Readership: Probabilists

Fragmentation and coagulation are natural phenomena that are observed in many sciences, including astrophysics, polymer chemistry, population genetics, biology and computer science, and which arise at a great variety of scales. This monograph develops in a formal manner mathematical models which may be used in situations where either phenomenon occurs randomly and repeatedly over time. It is very clearly written, as well as being beautifully produced, but is primarily aimed at readers with a very firm background in probability theory. The development is through a 'theorem/proof' style of presentation, which is very clearly signposted, and I am of the firm view that the book will succeed in making recent advances in random fragmentation and coagulation processes accessible to its intended readership. It is elegant and authoritative.

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Technology and Medicine  
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G.A. Young

VISUAL STATISTICS: SEEING DATA WITH DYNAMIC INTERACTIVE GRAPHICS.

F.W. Young, P.M. Valero-Mora, and M. Friendly.  
Hoboken, New Jersey: Wiley, 2006,  
pp. xx + 363, £52.95.

Contents:

PART I: Introduction

1. Introduction
2. Examples

PART II: Seeing Data - The Process

3. Interfaces and environments
4. Tools and techniques

PART III: Seeing Data - Objects

5. Seeing frequency data
6. Seeing univariate data
7. Seeing bivariate data
8. Seeing multivariate data
9. Seeing missing values

Readership: Novices, without a strong mathematical or statistical background, who are afraid of mathematics, who judge their mathematical skills to be inadequate, who have had negative experiences with statistics or mathematics, or have not recently exercised their skills. Practitioners, who are actively using statistical or data analytic methods, including teachers. Developers, who wish to develop new visual statistics methods

Forrest Young has been a leading light in developing dynamic interactive graphics for decades. I have been impressed and inspired by seeing descriptions of his methods at conferences, and so am delighted to see this book appear. As well as representing 'the major publication

of [his] entire research career, research that has been the focus of [his] professional life for the last 40 years', this book also represents a collaboration with two co-authors who have each also made highly significant contributions to statistical graphics. I think a sentence from the preface nicely summarizes the aim of the book. It says 'our presentation emphasizes a paradigm for understanding data that is visual, intuitive, geometric, and active, rather than one that relies on convoluted logic, heavy mathematics, systems of algebraic equations, and passive acceptance of results.' Of course, one needs to recognize that there are places for different approaches to data analysis. Tools for helping one to gain an understanding of a set of data may well be different from tools for objectively inferring the information content of a set of data and communicating that to a second party. Eclecticism and inclusion are important in modern data analysis. The authors appreciate this.

Above all, however, I think this book illustrates well how dramatically the discipline of data analysis has been advanced by the computer. 'Dynamic, interactive graphics' is a meaningless concept without such machines. Dynamic, interactive graphics provide an excellent example of how the computer has extended the range of our ability to probe data, to understand data, and to think about data.

I cannot finish without observing that there is something curiously anomalous about the idea of a book (necessarily static and non-interactive) being used as a medium through which to describe dynamic interactive methods. The authors also recognize this, and stress that learning about such things necessarily requires abandoning the book at times, and actually sitting in front of a computer to try them out for oneself.

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D.J. Hand

#### MULTIDIMENSIONAL NONLINEAR DESCRIPTIVE ANALYSIS.

S. Nishisato.

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2007, pp. 312,  
US\$89.95/£49.99.

Contents:

PART I: Background

1. Motivation
2. Quantification with different perspectives
3. Historical overview
4. Conceptual preliminaries
5. Technical preliminaries

PART II: Analysis of Incidence Data

6. Contingency tables
7. Multiple choice data
8. Scoring data
9. Forced classification of incidence data

PART III: Analysis of Dominance Data

10. Paired comparison data
11. Rank-order data
12. Successive categories data

PART IV: Beyond the Basics

13. Further topics of interest
14. Further perspectives

Readership: Students in the social and biological sciences and researchers in such fields as marketing research, education, health and medical sciences, psychology, sociology, biology, ecology, agriculture, economics, political science, criminology, archaeology, geology and geography

I have taken the readership list from the preface of the book, and it invites two remarks. The first is that the

length of the list is entirely justified. Researchers in almost every area could and should make use of the ideas and tools described in this book. The second is that the list does not include statisticians. It should. In fact, perhaps it is something of an implicit indictment of modern statistics and modern statistical teaching that this was not the obvious first item for the author to include in the list. Data analytic methods as widely used as those described in this book should certainly be taught in statistics courses. The book describes methods for quantifying categorical data, which are, of course, ubiquitous. Such methods have gone under various names, having been developed in parallel in a variety of areas - including those listed. The fact that this parallel development occurred again indicates the importance of the ideas: many people, in many different disciplines, have need of such tools.

This book provides a comprehensive overview of such methods; this is to be expected since Shizuhiko Nishisato is one of the seminal thinkers in the area. It includes historical perspectives and also nicely integrates the different developments and ties different strands together. It requires only intermediate mathematics, and only occasionally uses matrix algebra. I think it would serve as a rewarding book around which to base a course.

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D.J. Hand

#### A HANDBOOK OF STATISTICAL ANALYSES USING R.

B.S. Everitt and T. Hothorn.

Boca Raton, Florida: Chapman and  
Hall/CRC Press, 2006, pp. 275,  
US\$49.95/£29.99.

Contents:

1. An introduction to R
2. Simple inference
3. Conditional inference
4. Analysis of variance
5. Multiple linear regression
6. Logistic regression and generalised linear models
7. Density estimation
8. Recursive partitioning
9. Survival analysis
10. Analysing longitudinal data I
11. Analysing longitudinal data II
12. Meta-analysis
13. Principle component analysis
14. Multidimensional scaling
15. Cluster analysis

Readership: Graduate and advanced undergraduate students in statistics, statistical consultants

The R package, which has become somewhat ubiquitous in academic departments, is designed as part of the GNU project as freeware similar in appearance to S and hence S-plus. This book, using analyses of real sets of data, takes the reader through many of the standard forms of statistical methodology using R. The description of each technique is necessarily brief, but for a user with sound statistical background, this book is a very valuable reference. The sets of data used contain some old friends and in general are well chosen for illustrating the 'classroom demonstration' of a topic. The book is particularly good at highlighting the graphical capabilities of the language. Note that downloading the associated R packages and vignettes requires at least R version 2.2.1 and will not work on even relatively new systems with older versions. This might cause frustration if you are keen to get started working with the book.

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P. Marriott

SEMI-PARAMETRIC THEORY AND MISSING DATA.

A.A. Tsiatis.

New York: Springer-Verlag, 2006, pp. ix + 383, US\$84.95.

## Contents:

1. Introduction to semi-parametric models
2. Hilbert space for random vectors
3. The geometry of influence functions
4. Semi-parametric models
5. Other examples of semi-parametric models
6. Models and methods for missing data
7. Missing and coarsening at random for semi-parametric models
8. The nuisance, tangent, space and its orthogonal complement
9. Augmented inverse probability weighted complete-case estimators
10. Improving efficiency and double robustness with coarsened data
11. Locally efficient estimators for coarsened-data parametric models
12. Approximate methods for gaining efficiency
13. Double-robust estimator of the average causal treatment effect
14. Multiple imputation: A frequentist perspective

Readership: Students of statistics and biostatistics

This book describes theory underlying semi-parametric methods that treat nuisance parameters as infinite-dimensional. The first five chapters review the theory for complete data, from a geometric perspective. The other chapters describe applications to missing (coarsened) data, including chapters on causal inference and multiple imputation. Mathematical demands are quite high, though the book presents key ideas and avoids proofs and technical details. As a Bayesian I am admittedly somewhat skeptical about the general approach, which is asymptotic and frequentist. For example covariates that I would view as ancillary and fixed are assigned a nonparametric model; the estimator (5.62) for a randomized clinical trial involves the probability of treatment allocation, an ancillary quantity of doubtful relevance to inference once sample counts are known. However, this approach has its devotees. Since much of the work in this area is very technical, it is most welcome to have a self-contained clearly written account by a highly-regarded author. The application to missing data is also clearly of great interest.

University of Michigan  
Ann Arbor, U.S.A.

R.J.A. Little

NONPARAMETRIC FUNCTIONAL DATA ANALYSIS.  
THEORY AND PRACTICE.

F. Ferraty and P. Vieu.

New York: Springer-Verlag,  
2006, pp. xx + 258, US\$79.95.

## Contents:

- PART I: Statistical Background for Nonparametric Statistics and Functional Data
1. Introduction to functional nonparametric statistics
  2. Some functional datasets and associated statistical problematics
  3. What is a well-adapted space for functional data?
  4. Local weighting for functional variables
- PART II: Nonparametric Prediction from Functional Data
5. Functional nonparametric prediction methodologies
  6. Some detected asymptotics
  7. Computational issues
- PART III: Nonparametric Classification of Functional Data
8. Functional nonparametric supervised classification
  9. Functional nonparametric unsupervised classification

## PART IV: Nonparametric Methods for Dependent Functional Data

10. Mixing, nonparametric and functional statistics
11. Some selected asymptotics
12. Application to continuous time processes prediction

## PART V: Conclusions

13. Small ball probabilities and semi-metrics
14. Some perspectives

## APPENDIX: Some Probabilistic Tools

Readership: Academic researchers and students in functional data analysis

The book gives the theoretical aspects as well as the practical implementation of the nonparametric modelling of functional data (like curves or images). The first part deals with the general statistical methodology for such data while the other parts focus on more advanced aspects: functional exploratory variables, classification of functional data, and dependent samples from functional data. The practical implementation is done in R and S-PLUS and is available from a companion website. This is certainly a very valuable book for anyone interested in this new methodology.

Universiteit Hasselt  
Diepenbeek, Belgium

N.D.C. Veraverbeke

HANDBOOK OF STATISTICAL DISTRIBUTIONS WITH APPLICATIONS.

K. Krishnamoorthy.

Boca Raton, Florida: Chapman and Hall/CRC Press,  
2006, pp. 346, US\$74.90/£44.99.

## Contents:

1. Preliminaries
2. Discrete uniform distribution
3. Binomial distribution
4. Hypergeometric distribution
5. Negative binomial distribution
6. Logarithmic series distribution
7. Uniform distribution
8. Normal distribution
9. Chi-square distribution
10. *F*-distribution
11. Student's *t*-distribution
12. Exponential distribution
13. Beta distribution
14. Noncentral chi-squared distribution
15. Noncentral *t*-distribution
16. Laplace distribution
17. Lognormal distribution
18. Pareto distribution
19. Extreme value distribution
20. Cauchy distribution
21. Rayleigh distribution
22. Bivariate normal distribution
23. Sign test and confidence interval for the median
24. Wilcoxon signed-rank test
25. Wilcoxon rank-sum test
26. Nonparametric tolerance interval
27. Tolerance factors for a multivariate normal population
28. Distribution of the sample multiple correlation coefficient

Readership: Undergraduate statistics students

A reference book containing commonly used facts about the standard distributions used in undergraduate statistics, the book also contains a CD with the software *StatCalc* the use of which is illustrated in the text.

University of Waterloo  
Waterloo, Canada

P. Marriott

INTRODUCTORY STATISTICAL INFERENCE.

N. Mukhopadhyay.

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. xviii + 280,  
\$89.95/£39.99.

## Contents:

1. Probability and distributions
2. Moments and generating functions
3. Multivariate random variables
4. Sampling distributions
5. Notations of convergence
6. Sufficiency, completeness and ancillarity
7. Point estimation
8. Tests of hypotheses
9. Confidence intervals
10. Bayesian methods
11. Likelihood ratio and other tests
12. Large sample methods
13. Abbreviations, historical notes and tables

Readership: Graduate and advanced undergraduate  
students in statistics

This book aims to be the basis of a single semester course at the graduate level that covers both probability and statistics. It follows a very classical approach to mathematical statistics and tries to aim somewhere between the level of Hogg and Craig (1995), to which it is very similar, and the much more comprehensive Schervish (1995). The book is unfortunately somewhat marred by poor presentation in language, typesetting and graphics.

## References:

- R.V. Hogg and A.T. Craig, (1995). *Introduction to Mathematical Statistics*, MacMillan.  
M.J. Schervish, (1995). *Theory of Statistics*, Springer-Verlag.

University of Waterloo  
Waterloo, Canada

P. Marriott

AN INTRODUCTION TO RANDOM SETS.

H.T. Nguyen.

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. ix + 257,  
US\$89.95/£49.99.

## Contents:

1. Generalities on probability
2. Some random sets in statistics
3. Finite random sets
4. Random sets and related uncertainty measures
5. Random closed sets
6. The Choquet integral
7. Choquet weak convergence
8. Some aspects of statistical inference with coarse data

Readership: Researchers and students in probability and  
statistics, mathematics, computer science

The book starts from situations in statistics and related fields where sets appear naturally as 'observations'. The theory to analyze such data is random set theory and it is based on ideas of Choquet, Kendall and Mathéron. The presentation of the material is from the ground up and there is an Appendix with basics from probability theory. The text is a solid introduction to this modern topic and brings together various results from the literature. The examples and the exercises make the book interesting for use in teaching.

Universiteit Hasselt  
Diepenbeek, Belgium

N.D.C. Veraverbeke

AN INTRODUCTION TO BAYESIAN ANALYSIS. THEORY AND METHODS.

J.K. Ghosh, M. Delampady and T. Samanta.

New York: Springer-Verlag, 2006,  
pp. xiii + 352, US\$79.45.

## Contents:

1. Statistical preliminaries
2. Bayesian inference and decision theory
3. Utility, proof and Bayesian robustness
4. Large sample methods
5. Choice of proofs for low-dimensional parameters
6. Hypothesis testing and model selection
7. Bayesian computations
8. Some common problems in inference
9. High-dimensional problems
10. Some applications

APPENDIX A: Common Statistical Densities

APPENDIX B: Bimbaum's Theorem on Likelihood  
Principle

APPENDIX C: Coherence

APPENDIX D: Microarray

APPENDIX E: Bayes Sufficiency

Readership: Graduate students and researchers of  
biostatistics and statistics

This text provides a unique blend of theory, methods and applications that is suitable for a one-semester course in Bayesian analysis. Theoretical topics are supplemented by simulation and the elicitation of subjective priors is discussed, as well as the limitations of objective priors. The last chapter presents three methodological applications - hierarchical Bayesian modelling of spatial data, Bayesian nonparametric regression using wavelets and the estimation of an unknown regression function using Dirichlet multinomial allocation. The text contains a number of exercises at the end of each chapter but further problems are available from a dedicated website. A prerequisite knowledge of basic statistics, undergraduate calculus and linear algebra would be helpful before embarking upon a course of study with this text. However, the authors have indicated sections which are either highly technical or specialised and these may be omitted on a first reading of the text.

CEFAS Lowestoft Laboratory  
Lowestoft, U.K.

C.M. O'Brien

MARKOV CHAIN MONTE CARLO. STOCHASTIC SIMULATION FOR BAYESIAN INFERENCE.

2nd edition.

D. Gamerman and H.F. Lopes.

Boca Raton, Florida: Chapman  
and Hall/CRC Press, 2006,  
pp. xvii + 323, US\$69.95.[Original 1997; *Short Book Reviews*, Vol. 18, p. 26]

## Contents:

1. Stochastic simulation
2. Bayesian inference
3. Approximate methods of inference
4. Markov chains
5. Gibbs sampling
6. Metropolis-Hastings algorithms
7. Further topics in MCMC

Readership: Postgraduate students and researchers of  
biostatistics and statistics, engineers and  
economists

This is the second edition of one of the most comprehensive and readable texts on stochastic simulation

using the technique of Markov Chain Monte Carlo. The mathematics pre-requisites of a basic undergraduate course on probability and statistics should be sufficient to understand the material contained in the book. Almost a decade has elapsed since the publication of the first edition and this second edition has been extensively updated to include the recent literature. New sections on spatial models and model adequacy have now been included; together with the incorporation of more illustrative material. Many of the computer codes, written in R and WinBUGS, used in the examples and exercises in the text are available for download from the Web. This enhances the utility of the book, both as a reference text for researchers and as an accompanying text on modern Bayesian computation and Bayesian inference courses for students.

CEFAS Lowestoft Laboratory  
Lowestoft, U.K.

C.M. O'Brien

#### MEASURE THEORY AND PROBABILITY THEORY.

K.B. Athreya and S. Lahiri.  
New York: Springer-Verlag,  
2006, pp. xviii + 618, US\$84.95.

##### Contents:

1. Measures
2. Integration
3.  $L^p$  spaces
4. Differentiation
5. Product measures, convolutions, and transforms
6. Probability spaces
7. Independence
8. Laws of large numbers
9. Convergence in distribution
10. Characteristic functions
11. Central limit theorems
12. Conditional expectation and conditional probability
13. Discrete parameter martingales
14. Markov chains and MCMC
15. Stochastic processes
16. Limit theorems for dependent processes
17. The bootstrap
18. Branching processes

Readership: Anyone with senior undergraduate level or graduate level training in mathematics or probability

This book arose from, and provides the material for at least two graduate level courses, a one-semester course in measure followed by a one-semester course in advanced probability theory. In addition, there are interesting and non-standard topics that are not usually included in a first course in measure-theoretic probability including Markov Chains and MCMC, the bootstrap, limit theorems for martingales and mixing sequences, Brownian motion and Markov processes. The material is well-supported with many end-of-chapter problems.

University of Waterloo  
Waterloo, Canada

D.L. McLeish

#### STATISTICAL ANALYSIS OF ENVIRONMENTAL SPACE-TIME PROCESSES.

N.D. Le and J.V. Zidek.  
New York: Springer-Verlag,  
2006, pp. viii + 341, US\$79.95.

##### Contents:

##### PART I: Environmental Processes

1. First encounters
2. Case study
3. Uncertainty
4. Measurement
5. Modeling

##### PART II: Space-Time Modeling

6. Covariances
7. Spatial prediction: Classical approaches
8. Bayesian kriging
9. Hierarchical Bayesian kriging

##### PART III: Design and Risk Assessment

10. Multivariate modeling
11. Environmental network design
12. Extremes

##### PART IV: Implementation

13. Risk assessment
14. R tutorial

Readership: Researchers and consultants in environmetrics

The authors are experts in environmental space-time processes and cover in this book a wealth of methodology for dealing with data from this field. There are some technical sections containing the mathematics and statistics. The others are non-technical ones on environmental topics. There is a special Chapter 14 with a tutorial on the proposed methods, using the R software. It is certainly a very useful book for researchers and consultants in this challenging field.

Universiteit Hasselt  
Diepenbeek, Belgium

N.D.C. Veraverbeke

#### BENCHMARKING, TEMPORAL DISTRIBUTION, AND RECONCILIATION METHODS FOR TIME SERIES.

E.B. Dagum and P.A. Cholette.  
New York: Springer-Verlag, 2006,  
pp. xiv + 409, US\$69.95.

##### Contents:

1. Introduction
2. The components of a time series
3. The Cholette-Dagum regression based benchmarking method - The additive model
4. Covariance matrices for benchmarking and reconciliation methods
5. The Cholette-Dagum regression based benchmarking method - The multiplicative model
6. The Denton method and its variants
7. Temporal distribution, interpolation and extrapolation
8. Signal extraction and benchmarking
9. Calendarization
10. A unified regression-based framework for signal extraction, benchmarking and interpolation
11. Reconciliation and balancing systems of time series
12. Reconciling one-way classified systems of time series
13. Reconciling the marginal totals of two-way classified systems of series
14. Reconciling two-way classified systems of series

APPENDIX A: Extended Gauss-Markov Theorem

APPENDIX B: An Alternative Solution for the Cholette-Dagum Model for Binding Benchmarks

APPENDIX C: Formulas for Some Recurring Matrix Products

APPENDIX D: Seasonal Regressors

APPENDIX E: Trading-Day Regressors

Readership: Econometricians, time series analysts, statistical researchers in statistical agencies

This book is an attempt at bringing together the specialized research in topics related to benchmarking and reconciliation. The first chapter gives an introduction to several topics such as benchmarking, interpolation, temporal distribution, signal extraction, calendarization and reconciliation. Chapter 2 discusses time series decomposition models while Chapters 3 to 6 and 8 detail benchmarking. Later chapters discuss topics indicated in the contents.

Each chapter is somewhat self-contained and contains examples to illustrate the methodology. As indicated before, it is mainly oriented to researchers and hence the book assumes a good statistical background such as the knowledge of advanced Linear Models and Autoregressive Integrated Moving Average (ARIMA) time series models. It is an excellent reference book for people working in this area. To facilitate comparison among methods an example of real data, the Canada Total Retail Trade series, is followed throughout the book. It also gives several appendices to describe some theoretical results and an extensive list of references for readers to follow up.

University of Waterloo  
Waterloo, Canada

B. Abraham

#### A MODERN THEORY OF FACTORIAL DESIGNS.

R. Mukerjee and C.F.J. Wu.  
New York: Springer-Verlag,  
2006, pp. x + 221, US\$79.95.

#### Contents:

1. Introduction and overview
2. Fundamentals of factorial designs
3. Two-level fractional factorial designs
4. Fractional factorial designs: General case
5. Designs with maximum estimation capacity
6. Minimum aberration designs for mixed factorials
7. Block designs for symmetrical factorials
8. Fractional factorial split-plot designs
9. Robust parameter design

References (104)

Readership: Sophisticated users of experimental designs

Minimum aberration (shortened to MA in this text) is a central feature in this excellent monograph, and the authors' stated intentions of "providing a comprehensive account of the modern theory of factorial designs with the MA approach at its core" (p. 4) are fully achieved. The book would be an excellent text for advanced courses in experimental design and for use as a reference text. There are many tables of designs throughout. However, these designs are necessarily listed in abbreviated form. Selecting a specific design for practical use requires mastery of the notation.

University of Wisconsin  
Madison, U.S.A.

N.R. Draper

#### DESIGN AND ANALYSIS OF EXPERIMENTS:

Volume 2. Advanced Experimental Design.  
K. Hinkelmann and O. Kempthorne.  
Chichester, U.K.: Wiley, 2005,  
pp. xxii + 780, £79.50.

#### Contents:

1. General incomplete block design
2. Balanced incomplete block designs
3. Construction of balanced incomplete block designs
4. Partially balanced incomplete block designs
5. Construction of partially balanced incomplete block designs
6. More block designs and blocking structures
7. Two-level factorial designs
8. Confounding in  $2^n$  factorial designs
9. Partial confounding in  $2^n$  factorial designs
10. Designs with factors at three levels
11. General symmetrical factorial design
12. Confounding in asymmetrical factorial designs
13. Fractional factorial designs
14. Main effect plans
15. Supersaturated designs
16. Search designs

17. Robust-design experiments
18. Lattice designs
19. Crossover designs

Readership: Statisticians concerned with advanced experimental design

In 1952 Oscar Kempthorne's book gave a lucid and comprehensive account of the theory of the design of experiments as it was then. For many years that book was a standard reference on the subject. Sadly it was allowed to go out of print. In 1994 the present authors published Volume 1 of a massive revision of the older book. That first volume [*Short Book Reviews*, Vol. 14, p. 44] dealt with the more basic aspects of the subject. Now, Oscar Kempthorne having in the meantime died, Klaus Hinkelmann has brought the rewriting to a conclusion with the volume under review. Kempthorne's original has in total roughly trebled in length.

The result is a massively impressive work of scholarship concentrating on the traditional core of the subject. For the main such categories of design, the combinatorics of construction are developed and linear-model-based analyses set out in detail and often illustrated with empirical examples, not discussed in depth in subject-matter terms, and with SAS programs. There is a cautious chapter on Taguchi-methods, but so far as I could see from my sampling of the text and from the index, there is no mention of central composite designs and similar arrangements. The theory of optimal design is outlined and reservations over its practicality set out. The emphasis is strongly on designs of complex structure and on traditional methods of error control by blocking rather than by, for instance, spatial or temporal modelling.

The two volumes form an encyclopaedic account of the chosen aspects of that challenging topic, the statistics of experimental design.

Nuffield College  
Oxford, U.K.

D.R. Cox

#### GENERALIZED LINEAR MODELS WITH RANDOM EFFECTS.

Y. Lee, J.A. Nelder, and Y. Pawitan.  
Boca Raton, Florida: Chapman and Hall/CRC Press,  
2006, pp. 396, US\$89.95/£49.99.

#### Contents:

1. Classical likelihood theory
2. Generalized linear models
3. Quasi-likelihood
4. Extended likelihood functions
5. Normal linear mixed models
6. Hierarchical GLMs
7. HGLMs with structured dispersion
8. Correlated random effects for HGLMs
9. Smoothing
10. Random-effect models for survival data
11. Double HGLMs
12. Further topics

Readership: Statisticians, scientists with good background in statistical theory and modelling

Professors Y. Lee and J.A. Nelder proposed a new approach to handling random effects in generalized linear models in a 1996 discussion paper in the *Journal of the Royal Statistical Society Series B* [Vol 58, pp. 619-678]. Since then, they have published a substantial body of literature extending their hierarchical "h-likelihood" and extended quasi-likelihood approach to inference. This book provides a comprehensive summary of their work. However, it is much more than that, and even statisticians who do not agree with their approach to inference will find much here of interest. By picking various sections mainly from the first half of this book, some instructors might find this to

be a useful text for a course on generalized linear models. There are no end-of-chapter exercises, but there are many ideas that will be useful for a student to mull over, including an overview of likelihood theory and ways of defining and using likelihood functions.

University of Florida  
Gainesville, U.S.A.

A. Agresti

MEASUREMENT ERROR IN NONLINEAR MODELS.

A MODERN PERSPECTIVE, 2nd edition.

R.J. Carroll, D. Ruppert, L.A. Stefanski and  
C.M. Crainiceanu.

Boca Raton, Florida: Chapman and Hall/CRC Press,

2006, pp. xxviii + 455, US\$89.95/£49.99.

[Original 1995; Short Book Reviews, Vol. 15, p. 5]

Contents:

1. Introduction
2. Important concepts
3. Linear regression and attenuation
4. Regression calibration
5. Simulation extrapolation
6. Instrumental variables
7. Score function methods
8. Likelihood and quasilikelihood
9. Bayesian methods
10. Hypothesis testing
11. Longitudinal data and mixed models
12. Nonparametric estimation
13. Semiparametric regression
14. Survival data
15. Response variable error

APPENDIX A: Background Material

APPENDIX B: Technical Details

Readership: Applied statisticians, scientists and engineers  
who wish to fit structural models to their  
data

This is the second edition of a research level monograph, first published over ten years ago, about modeling with predictors that are subject to measurement error, a situation which arises in practice much more often than usually admitted. The text describes a variety of approaches to handling such data and illustrates the models and methods with numerous examples. The early chapters set the scene with a clear description of the problem through many examples, a discussion of the different types of error and the distinction between functional and structural models. These two types of models form the basis of the second and third parts of the book respectively, with the final part devoted to more specialized material including generalized linear structure with an unknown link function, hypothesis testing and non-parametric regression. The material depends very heavily on an appreciation of likelihood methods, and this edition has been expanded by the inclusion of much more detailed sections, even completely new chapters, on Bayesian MCMC techniques, longitudinal data and mixed models, score functions and survival analysis. The end result is an up-to-date rigorous treatment of the general ideas and methods of estimation and inference in difficult problems involving non-linear measurement error models.

University of Southampton  
Southampton, U.K.

P. Prescott

SAMPLING ALGORITHMS.

Y. Tillé.

New York: Springer-Verlag,  
2006, pp. xi + 216, US\$74.95.

Contents:

1. Introduction and overview
2. Population, sample, and sampling design
3. Sampling algorithms
4. Simple random sampling
5. Unequal probability exponential designs
6. The splitting method
7. More on unequal probability designs
8. Balanced sampling
9. An example of the cube method

APPENDIX: Population of Municipalities in the Canton of  
Ticino (Switzerland)

Readership: Survey statisticians with a strong  
mathematical background

This book gives a comprehensive overview of sampling designs and algorithms for implementing them. It starts with a succinct, mathematically rigorous, introduction to designs, defined as discrete multivariate probability distributions (on  $\{0,1\}^N$  for sampling with replacement and on  $N^N$  for sampling without replacement), and their properties. It then gives a systematic description of six basic classes of algorithms (enumerative, martingale, sequential, draw by draw, eliminatory, and rejective) that together cover most known methods. These methods are explored in more detail, first for simple random sampling and then for general exponential designs.

A whole chapter is devoted to the splitting method, originally developed by DeVille and the author. This is a way of generating new algorithms but, perhaps more importantly, it also provides an integrated framework that includes almost all existing methods and hence can be used to make comparisons among different methods. There are a few important algorithms, such as systematic sampling and the Sampford method, that are not special cases of the splitting method and not exponential designs and these are covered in the following chapter. Finally there is a chapter on algorithms for implementing balanced sampling.

The mathematical level required to follow some of the treatment will seem rather formidable for many survey samplers. However the effort will be worthwhile for anyone interested in the topics covered. As well as containing much new material, the book succeeds in providing a systematic development for what often seems a collection of isolated and ad hoc methods.

University of Auckland  
Auckland, N.Z.

A.J. Scott

STATISTICS FOR REAL LIFE SAMPLE SURVEYS: NON-SIMPLE-RANDOM SAMPLES AND WEIGHTED DATA.

S. Dorofeev and P. Grant.

Cambridge University Press, 2006, pp. ix + 266,  
£55.00/US\$99.00 Cloth; £24.99/US\$45.00 Paper.

Contents:

1. Sampling methods
2. Weighting
3. Statistical effects of sampling and weighting

4. Significance testing
5. Measuring relationships between variables

APPENDIX A: Review of General Terminology  
 APPENDIX B: Further Reading  
 APPENDIX C: Summary Tables for Several Common Distributions  
 APPENDIX D: Chapter 2 Mathematical Proofs  
 APPENDIX E: Chapter 3 Mathematical Proofs  
 APPENDIX F: Chapter 4 Mathematical Proofs  
 APPENDIX G: Chapter 5 Mathematical Proofs  
 APPENDIX H: Statistical Tables

Readership: Practising market and social researchers

To avoid the risk of the contents list being misleading, I should remark that Chapters 1 to 5 of the book are the first 226 of the book's 266 pages.

Both authors of this book are experienced market and social researchers. Their aim is to provide an understanding of the practical aspects of sampling, beyond straightforward simple random samples and without delving deeply into mathematics. It is not intended to provide comprehensive coverage of all social survey issues, but to provide a reference source for the principles of sampling and evaluation of sample-based data, with emphasis on the practicalities of real value. The authors comment that professional statisticians working in the assessment of sampling and non-sampling survey error may find the discussion too superficial, but that it is primarily aimed at practising researchers 'who may have only basic formal statistical training'.

In their preface, the authors remark 'we have also included a short review of some of the more common analytical tools used with survey data. If we seem slightly less than enthusiastic in our endorsement of these it is because experience has taught us to be cautious in applying sophisticated mathematical procedures to data that may be considerably less sophisticated.' This is a sentiment I heartily endorse.

I think the authors have succeeded in their aims: this book will be valuable for analysts who are not survey

sampling professionals or who have not been formally trained in the technical background, but who nevertheless find themselves having to analyse survey data.

Imperial College of Science,  
 Technology and Medicine  
 London, U.K.

D.J. Hand

AMERICAN-STYLE DERIVATIVES. VALUATION AND COMPUTATION.

J. Detemple.

Boca Raton, Florida: Chapman and Hall/CRC Press, 2005, pp. 232, US\$94.95/£44.54.

Contents:

1. Introduction
2. European contingent claims
3. American contingent claims
4. Standard American options
5. Barrier and capped options
6. Options on multiple assets
7. Occupation time derivatives
8. Numerical methods

Readership: Advanced undergraduate students and researchers in finance

This research monograph gives an excellent summary of recent research on the American option problem. The book is very specialized and suitable for an advanced graduate course.

The subject matter at this level is unavoidably technical but the author maintains a good balance between rigor and intuition. The book concentrates on equity options rather than interest rate options, on pricing rather than hedging. Professor Detemple may not dig far but he digs deep.

University of Waterloo  
 Waterloo, Canada

P. Boyle

## NOTES

THE ACCESS PRINCIPLE. THE CASE FOR OPEN ACCESS TO RESEARCH AND SCHOLARSHIP.

J. Willinsky.

Cambridge, Massachusetts: MIT Press, 2006, pp. ix + 287, US\$34.95.

From the book jacket: "Questions about access to scholarship go back farther than recent debates over subscription prices, rights, and electronic archives suggest. The great libraries of the past - from the fabled collection at Alexandria to the early public libraries of nineteenth-century America - stood as arguments for increasing access. In *The Access Principle*, John Willinsky describes the latest chapter in this ongoing story - online open access publishing by scholarly journals - and makes a case for open access as a public good.

"A commitment to scholarly work, writes Willinsky, carries with it a responsibility to circulate that work as widely as possible: this is the access principle. In the digital age, that responsibility includes exploring new publishing technologies and economic models to improve access to scholarly work. Wide circulation adds value to published work; it is a significant aspect of its claim to be knowledge. The right to know and the right to be known are inextricably mixed. Open access, argues Willinsky, can benefit both a researcher-author working at the best-equipped lab at a leading research university and a teacher struggling to find resources in an impoverished high school.

"Willinsky describes different types of access - the *New England Journal of Medicine*, for example, grants

open access to issues six months after initial publication, and *First Monday* forgoes a print edition and makes its contents immediately accessible at no cost. He discusses the contradictions of copyright law, the reading of research, and the economic viability of open access. He also considers broader themes of public access to knowledge, human rights issues, lessons from publishing history, and "epistemological vanities." The debate over open access, writes Willinsky, raises crucial questions about the place of scholarly work in a larger world - and about the future of knowledge."

A DICTIONARY OF STATISTICS.

G. Upton and I. Cook.

Oxford University Press, 2006, pp. v + 490, US\$17.95; £9.99.

From the back cover: "This jargon-free dictionary contains over 2,000 entries on all aspects of statistics, covering terms used in computing, mathematics, operational research, and probability. It will be invaluable for students and professionals from a wide range of disciplines, including market research, medicine, psychology, pharmaceuticals, economics, and mathematics.

"[This volume] includes Internet links for recommended websites; contains around two hundred biographies of key figures in statistics; seventeen useful appendices including keys of mathematical and statistical notation; illustrations and worked examples give terms a practical context."

THE CAMBRIDGE DICTIONARY OF STATISTICS.

3rd edition.  
B.S. Everitt.  
Cambridge University Press,  
2006, pp. ix + 432, £45.00 Cloth;  
£17.99 Paper.  
[Original 1998; 2nd edition, 2002]

New entries including biographies of some statisticians have been added to the third edition along with corrections and classifications of some of the existing entries.

100 STATISTICAL TESTS, 3rd edition.

G.K. Kanji.  
London: Sage, 2006, pp. 242,  
£70.00 Cloth; £22.99 Paper.  
[Original 1993; 2nd edition, 1999]

From the back cover: "This expanded and updated edition of Gopal Kanji's best-selling resource on statistical tests provides unique coverage in one volume of the most commonly-used tests, with information on how to calculate and interpret results with simple datasets.

"Each entry begins with a short summary statement about the test's purpose and contains details of the objective, the limitations (or assumptions) involved, a brief outline of the method, a worked example and the numerical calculation.

"This new edition also includes: a new introduction to statistical testing with information to guide the reader through the book so that even non-statisticians can find information quickly and easily; real-world explanations of how and when to use each test, with examples drawn from a wide range of disciplines; a useful classification of tests table; all the relevant statistical tables for checking critical values."

PURSUIT OF GENIUS, Flexner, Einstein, and the Early

Faculty at the Institute for Advanced Study.  
S. Batterson.  
Wellesley, Massachusetts:  
A.K. Peters, 2006, pp. xi + 301,  
US\$39.00.

From the book jacket: "This book offers a long-overdue account of the early years of the Institute for Advanced Study in Princeton, New Jersey. This is the story of one man's vision of founding a higher-education institution that operates outside of the standard university model, a place without the pressures of teaching commitments, service obligations, or financial considerations — an environment focused on fostering genius through research."

"This is an engrossing tale about the development of advanced mathematical research in the twentieth century." Paul Sally, Jr., The University of Chicago

"The Institute for Advanced Study occupies a unique position among institutions of higher learning. An account of its early years is long overdue, so the appearance of the present volume, during the 75<sup>th</sup> anniversary of the Institute's founding, is most welcome. Batterson has mined the Institute's archives to provide a detailed and unvarnished account of the backstage conflicts and intrigue that attended the Institute's growth and determined its future. Those unfamiliar with the Institute will learn how one man's vision shaped a couple's philanthropy and created a haven for scholars in the midst of the Great Depression. Equally, those who have had the privilege of Institute membership will enhance their appreciation of the intellectual leaders who made their own Institute experiences possible." John W. Dawson, Jr., author of *Logical Dilemmas: The Life and Work of Kurt Gödel*

THE BEST OF ALL POSSIBLE WORLDS.MATHEMATICS AND DESTINY.

I. Ekeland.  
University of Chicago Press, 2006,  
pp. 207, US\$25.00/£16.00.

From the book jacket: "Optimists believe this is the best of all possible worlds. Pessimists fear that might really be the case. But what *is* the best of all possible worlds? How do we define it? Is it the world that operates in the most efficient way? Or the one in which most people are comfortable and content? There was a time, during the seventeenth and eighteenth centuries, when scientists felt they could answer these questions.

"This book is their story. Ivar Ekeland takes readers on a journey through scientific attempts to envision the best of all possible worlds. He begins with the French mathematician Maupertuis, whose least action principle asserted that everything in nature occurs in the way that requires the least possible action. This idea, Ekeland shows, was a pivotal breakthrough in science, because it was the first expression of the concept of optimization, or the design of systems that are the most efficient or functional. Although the least action principle was later elaborated and profoundly modified, the concept of optimization that emerged from it touches virtually every scientific discipline today.

"Tracing the profound impact of optimization and the unexpected ways in which it has influenced the study of mathematics, biology, economics, and even politics, Ekeland reveals throughout how the idea of optimization has driven some of our greatest intellectual break-throughs. The result is a fascinating story — one that will be essential reading for popular-science buffs and historians of science alike."

AHA! A TWO VOLUME COLLECTION. AHA! GOTCHAAHA! INSIGHT.

M. Gardner.  
Washington, D.C.: The Mathematical  
Association of America, 2006,  
pp. xvii + 181, US\$47.50.

From the back cover: "Aha! Gotcha and Aha! Insight are here combined as a single volume. The aha! books, as they are referred to by fans of the author Martin Gardner, contain 144 wonderful puzzles from the reigning king of recreational mathematics. In this combined volume, you will find puzzles ranging over geometry, logic, probability, statistics, number, time, combinatorics, and word play. Gardner calls these puzzles *aha!* problems. He explains that aha! problems "seem difficult, and indeed are difficult if you go about trying to solve them in traditional ways. But if you can free your mind from standard problem solving techniques, you may be receptive to an aha! reaction that leads immediately to a solution."

THE MATHEMATICS OF GAMES ANDGAMBLING, 2nd edition.

E.W. Packel.  
Washington, D.C.: The Mathematical  
Association of America, 2006,  
pp. xiv + 175, US\$44.00.

From the back cover: "This book introduces and develops some of the important and beautiful elementary mathematics needed for rational analysis of various gambling and game activities. Most of the standard casino games (roulette, craps, blackjack, keno), some social games (backgammon, poker, bridge) and various other activities (state lotteries, horse racing, etc.) are treated in ways that bring out their mathematical aspects. The

mathematics developed ranges from the predictable concepts of probability, expectation, and binomial coefficients to some less well-known ideas of elementary game theory. The second edition includes new material on: sports betting and the mathematics behind it; game theory applied to bluffing in poker and related to the "Texas Holdem phenomenon"; the Nash equilibrium concept and its emergence in the popular culture; internet links to games and to Java applets for practice and classroom use.

"The only formal mathematics background the reader needs is some facility with high school algebra. Game-related exercises are included at the end of most chapters for readers interested in working with and expanding ideas treated in the text. Solutions to some of the exercises appear at the end of the book."

#### AUTHENTICATION CODES AND COMBINATORIAL DESIGNS.

D. Pei.

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. vii + 241,  
US\$89.95/£49.99.

From the back cover: "Researchers and practitioners of cryptography and information security are constantly challenged to respond to new attacks and threats to information systems. *Authentication Codes and Combinatorial Designs* presents new findings and original work on perfect authentication codes characterized in terms of combinatorial designs, namely strong partially balanced designs (SPBD).

"Beginning with examples illustrating the concepts of authentication schemes and combinatorial designs, the book considers the probability of successful deceptions followed by schemes involving three and four participants, respectively. From this point, the author constructs the perfect authentication schemes and explores encoding rules for such schemes in some special cases. Using rational normal curves in protective spaces over finite fields, the author constructs a new family of SPBD. He then presents some established combinatorial designs that can be used to construct perfect schemes, such as t-designs, orthogonal arrays of index unity, and designs constructed by finite geometry. The book concludes by studying definitions of perfect secrecy, properties of perfectly secure schemes, and constructions of perfect secrecy schemes with and without authentication.

"[This volume] provides: comprehensive treatment of authentication in information security and authentication codes; covers combinatorial designs and their applications to authentication codes; discusses the applications of finite geometry over finite fields to the theory of combinatorial designs; presents an in-depth analysis of unconditionally secure authentication schemes; covers both symmetric and asymmetric authentication codes."

#### ADVERSARIAL REASONING. Computational Approaches to Reading the Opponent's Mind.

A. Kott and W.M. McEneaney (Eds.).

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2007, pp. 340, US\$89.95/£49.99.

From the back cover: "The rising tide of threats, from financial cybercrime to asymmetric military conflicts demands greater sophistication in tools and techniques of law enforcement, commercial and domestic security professionals, and terrorism prevention. Concentrating on computational solutions to determine or anticipate an adversary's intent, *Adversarial Reasoning. Computational Approaches to Reading the Opponent's Mind* discusses the technologies for opponent strategy prediction, plan recognition, deception discovery and planning, and strategy formulation that not only applies to security issues but also to game industry and business transactions.

"Addressing a broad range of practical problems, including military planning and command, military and foreign intelligence, antiterrorism, network security, as well as simulation and training systems, this reference presents an overview of each problem and then explores the various approaches and applications to understand the mind and negate the action of your opponent. The beginning chapters outline the key concepts related to discovering the opponent's intent and plan while the subsequent chapters journey into more mathematical methods for counterdeception. The final chapters employ a range of techniques, including reinforcement learning within a stochastic dynamic games context to devise strategies that combat opponents."

#### A COURSE IN MATHEMATICAL BIOLOGY. QUANTITATIVE MODELING WITH MATHEMATICAL AND COMPUTATIONAL METHODS.

G. de Vries, T. Hillen, M. Lewis, J. Muller and  
B. Schonfisch.

Philadelphia: Society for Industrial and Applied  
Mathematics, 2006, pp. xii + 309.

From the back cover: "The field of mathematical biology is growing rapidly. Questions about infectious diseases, heart attacks, cell movement, ecology, environmental changes, and genomics are now being analyzed using mathematical and computational methods. *A Course in Mathematical Biology: Quantitative Modeling with Mathematical and Computational Methods* teaches all aspects of modern mathematical modeling and is specifically designed to introduce undergraduate students to problem solving in the context of biology.

"Divided into three parts, the book covers basic analytical modeling techniques and model validation methods; introduces computational tools used in the modeling of biological problems; and provides a source of open-ended problems from epidemiology, ecology and physiology. All chapters include realistic biological examples, and there are many exercises related to biological questions. In addition, the book includes 25 open-ended research projects that can be used by students. The book is accompanied by a Web site that contains solutions to most of the exercises and a tutorial for the implementation of the computational modeling techniques. Calculations can be done in modern computing languages such as Maple, *Mathematica* and Matlab®."

#### INTRODUCTION TO THE MATHEMATICS OF OPERATIONS RESEARCH WITH MATHEMATICA, 2nd edition.

K.J. Hastings.

Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. vii + 567,  
US\$89.95/£44.99.

[Original 1990; Short Book Reviews, Vol. 10, p. 9]

From the back cover: "The breadth of information about operations research and the overwhelming size of previous sources on the subject make it a difficult topic for non-specialists to grasp. Fortunately, *Introduction to the Mathematics of Operations Research with Mathematica®*, *Second Edition* delivers a concise analysis that benefits professionals in operations research and related fields in statistics, management, applied mathematics, and finance.

"The second edition retains the character of the earlier version, while incorporating developments in the sphere of operations research, technology, and mathematics pedagogy. Covering the topics crucial to applied mathematics, it examines graph theory, linear programming, stochastic processes, and dynamic programming. This self-contained text includes an accompanying electronic version and a package of useful commands. The electronic version is in the form of *Mathematica* notebooks."

MULTIPLE CORRESPONDENCE ANALYSIS AND RELATED METHODS.

M. Greenacre and J. Blasius (Eds.).  
Boca Raton, Florida: Chapman and Hall/CRC Press, 2006, pp. 581,  
US\$99.95/£56.99.

From the back cover: "As a generalization of simple correspondence analysis, multiple correspondence analysis (MCA) is a powerful technique for handling larger, more complex datasets, including the high-dimensional categorical data often encountered in the social sciences, marketing, health economics, and biomedical research. However, the literature on the subject has been scattered, leaving many in these fields with no comprehensive resource from which to learn its theory, applications, and implementation.

"*Multiple Correspondence Analysis and Related Methods* gives a state-of-the-art description of this new field in an accessible, self-contained, textbook format. Explaining the methodology step-by-step, it offers an exhaustive survey of the different approaches taken by researchers from different statistical "schools" and explores a wide variety of application areas. Each chapter includes empirical examples that provide a practical understanding of the method and its interpretation and most chapters end with a "Software Note" that discusses software and computational aspects. An appendix at the end of the book gives further computing details along with code written in the R language for performing MCA and related techniques. The code and the sets of data used in the book are available for download from a supporting Web page.

"Providing a unique, multidisciplinary perspective, experts in multiple correspondence analysis from both statistics and the social sciences contributed chapters to the book. The editors unified the notation and co-ordinated and cross-referenced the theory across all of the chapters, making the book read seamlessly. Practical, accessible, and thorough, *Multiple Correspondence Analysis and Related Methods* brings the theory and applications of MCA under one cover and provides a valuable addition to your statistical toolbox."

STATISTICAL METHODS FOR SPATIO-TEMPORAL SYSTEMS.

B. Finkenstad, L. Held and V. Isham (Eds.).  
Boca Raton, Florida: Chapman and Hall/CRC Press,  
2007, pp. xvi + 286, US\$89.95/£49.99.

From the back cover: "*Statistical Methods for Spatio-Temporal Systems* presents current statistical research issues on spatio-temporal data modeling and will promote advances in research and a greater understanding between the mechanistic and the statistical modeling communities.

"Contributed by leading researchers in the field, each self-contained chapter starts with an introduction of the topic and progresses to recent research results. Presenting specific examples of epidemic data of bovine tuberculosis, gastroenteric disease, and the U.K. foot-and-mouth outbreak, the first chapter uses stochastic models to provide the probabilistic backbone that facilitates statistical inference from data. The next chapter discusses the critical issue of modeling random growth objects in diverse biological systems, such as bacteria colonies, tumors, and plant populations. The subsequent chapter examines data transformation tools using examples from ecology and air quality data, followed by a chapter on space-time covariance functions. The contributors then describe stochastic and statistical models that are used to generate simulated rainfall sequences for hydrological use. The final chapter explores Gaussian Markov random field specifications and Bayesian computational inference via Gibbs sampling and Markov chain Monte Carlo, illustrating the methods with a variety of data examples, such as temperature surfaces and dioxin concentrations."

UNCERTAINTY MODELING AND ANALYSIS IN ENGINEERING AND THE SCIENCES.

B. Ayyub and G. Klir.  
Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. i + 378,  
US\$89.95/£39.99.

From the back cover: "Engineers and scientists often need to solve complex problems with incomplete information resources, necessitating a proper treatment of uncertainty and a reliance on expert opinions. *Uncertainty Modeling and Analysis in Engineering and the Sciences* prepares current and future analysts and practitioners to understand the fundamentals of knowledge and ignorance, how to model and analyze uncertainty, and how to select appropriate analytical tools for particular problems.

"This volume covers primary components of ignorance and their impact on practice and decision making. It provides an overview of the current state of uncertainty modeling and analysis, and reviews emerging theories while emphasizing practical applications in science and engineering.

"The book introduces fundamental concepts of classical, fuzzy, and rough sets, probability, Bayesian methods, interval analysis, fuzzy arithmetic, interval probabilities, evidence theory, open-world models, sequences, and possibility theory. The authors present these methods to meet the needs of practitioners in many fields, emphasizing the practical use, limitations, advantages, and disadvantages of the methods."

COMPUTATIONAL BIOLOGY. A Statistical Mechanics Perspective.

R. Blossey.  
Boca Raton, Florida: Chapman and Hall/  
CRC Press, 2006, pp. 251, US\$79.95/£44.99.

From the back cover: "*Computational Biology: A Statistical Mechanics Perspective* is the first book dedicated to the interface between statistical physics and bioinformatics. Introducing both equilibrium and nonequilibrium statistical mechanics in a manner tailored to computational biologists, the author applies these methods to understand and model the properties of various biomolecules and biological networks at the systems level."

STATISTICAL METHODS IN COUNTERTERRORISM. GAME THEORY, MODELING, SYNDROMIC SURVEILLANCE, AND BIOMETRIC AUTHENTICATION.

A.G. Wilson, G.D. Wilson and D.H. Olwell (Eds.).  
New York: Springer-Verlag, 2006,  
pp. xii + 292, US\$39.95.

From the back cover: "'All the data was out there to warn us of this impending attack, why didn't we see it?' This was a frequently asked question in the weeks and months after the terrorist attacks on the World Trade Center and the Pentagon on September 11, 2001. In the wake of the attacks, statisticians moved quickly to become part of the national response to the global war on terror. This book is an overview of the emerging research program at the intersection of national security and statistical sciences. A wide range of talented researchers address issues in Syndromic Surveillance - How do we detect and recognize bioterrorist events? Modeling and Simulation - How do we better understand and explain complex processes so that decision makers can take the best course of action? Biometric Authentication - How do we pick the terrorist out of the crowd of faces or better match the passport to the traveler? Game Theory - How do we understand the rules that terrorists are playing by?

This book includes technical treatments of statistical issues that will be of use to quantitative researchers as well as more general examinations of quantitative ap-

proaches to counterterrorism that will be accessible to decision makers with stronger policy backgrounds."

THE CRYPTOCLUB. Using Mathematics to Make and Break Secret Codes.  
J. Beissinger and V. Pless.  
Wellesley, Massachusetts:  
A.K. Peters, 2006, pp. xvi + 199,  
US\$35.00.

From the back cover: "The encryption systems covered in this book range from classic ciphers that have

been around for hundreds of years, such as the Caesar and Vigenere ciphers, to the modern RSA system that provides security for information passed over the internet. Connections are made to historical events and applications of recent mathematical research, giving students the opportunity to see mathematics as an exciting, changing subject.

"The book includes problems, suggestions for games and classroom activities, and messages to encrypt and decrypt. The material can be used in conventional classrooms, by after-school clubs, in home-schooling environments, or for independent learning."

### NEW EDITIONS, PAPER EDITIONS OR REPRINTS

ADVANCED GLOBAL ILLUMINATION, 2nd edition.  
P. Dutre, K. Bala and P. Bekaert.  
Wellesley, Massachusetts: A.K. Peters, 2006,  
pp. xvi + 366, US\$54.00.  
[Original 2003]

BASIC STATISTICS AND PHARMACEUTICAL  
STATISTICAL APPLICATIONS, 2nd edition.  
J.E. De Muth.  
Boca Raton, Florida: Chapman and Hall/CRC Press,  
2006, pp. i + 714, US\$89.95 / 39.99.  
[Original 1999; Short Book Reviews, Vol. 20, p. 17]

INTRODUCTION TO LINEAR REGRESSION  
ANALYSIS, 4th edition.  
D.C. Montgomery, E.A. Peck and G.G. Vining.  
Hoboken, New Jersey: Wiley, 2006,  
pp. xvi + 612, £64.95.  
[Original 1982; Short Book Reviews, Vol. 2, p. 16;  
2nd edition 1992; 3rd edition 2001]

PROBABILITES ANALYSE DES DONNEES ET  
STATISTIQUE, 2<sup>me</sup> edition revisee et augmentee.  
G. Saporta.  
Paris: Editions Technip, 2006, pp. xxxiii + 622,  
US\$79.00/£66.00 / FF387.02.  
[Original 1990; Short Book Reviews, Vol. 10, p. 47]

SERIES APPROXIMATION METHODS IN  
STATISTICS, 3rd edition.  
J. Kolassa.  
New York: Springer-Verlag, 2006, pp. v + 214,  
US\$59.95.  
[Original 1994; Short Book Reviews, Vol. 15, p. 6;  
2nd edition 1997]

STATISTICAL REASONING IN MEDICINE. The Intuitive  
P-Value. Primer, 2nd edition.  
L.A. Moyé.  
New York: Springer-Verlag, 2006, pp. xx + 301,  
US\$54.95.

THE OXFORD DICTIONARY OF STATISTICAL TERMS.  
Y. Dodge (Ed.).  
Oxford University Press, 2006, pp. vii + 498,  
£12.99 Paper.  
[Original 2003; Short Book Reviews, Vol. 23, p. 37]

UNIVARIATE AND MULTIVARIATE GENERAL LINEAR  
MODELS. Theory and Applications with SAS,  
2nd edition.  
K. Kim and N. Timm.  
Boca Raton, Florida: Chapman and Hall/CRC Press,  
2007, pp. xvii + 549 + CD, US\$79.95/£39.99.

### UNITED NATIONS STATISTICAL OFFICE PUBLICATIONS RECENTLY ISSUED

2003 ENERGY STATISTICS YEARBOOK.  
ST/ESA/STAT/SER/J/47.  
2005, pp. xlviii + 539. U.N. Sales No. E/F.06.xvii.2.

IARC MONOGRAPHS ON THE EVALUATION OF  
CARCINOGENIC RISKS TO HUMANS. Volume 86.  
Cobalt in Hard Metals and Cobalt Sulfate, Gallium

Arsenide, Indium Phosphide and Vanadium Pentoxide.  
Lyon, France: World Health Organization. International  
Agency for Research on Cancer, 2006, pp. xiv + 330.

POPULATION AND VITAL STATISTICS REPORT.  
STATISTICAL PAPERS SERIES A, Vol. LVIII, No. 1.  
Data available as of 1 January 2006.  
ST/ESA/STAT/SER. A/236-237, 2006, pp. 21.

### GOVERNMENT PUBLICATIONS

STATISTICAL YEARBOOK OF THE NETHERLANDS  
2006.  
Voorburg: Statistics Netherlands, 2006, pp. 224.

### COLLECTED PAPERS, TABLES, EDITED VOLUMES AND PROCEEDINGS

BAYESIAN INFERENCE FOR GENE EXPRESSION AND  
PROTEOMICS.  
K. Do, P. Müller and M. Vennucci (Eds.).  
Cambridge University Press, 2006, pp. xviii + 437,  
£45.00/US\$75.00.

GRAPHICS INTERFACE 2006. Quebec, Quebec, Canada.  
June 7-9, 2006. Proceedings. Canadian Human-  
Computer Communications Society.  
S. Mann and C. Gutwin (Eds.).  
Wellesley, Massachusetts: A.K. Peters, 2006,  
pp. ix + 250, US\$70.00.

## BOOKS RECEIVED

- AN INTRODUCTION TO GENERAL RELATIVITY AND COSMOLOGY.  
J. Plebański and A. Kragiński.  
Cambridge University Press, 2006,  
pp. xix + 534, £45.00/US\$80.00.
- AN INTRODUCTION TO SYSTEMS BIOLOGY: DESIGN PRINCIPLES OF BIOLOGY.  
U. Alon.  
Boca Raton, Florida: Chapman and Hall/CRC Press, 2007, pp. ix + 301,  
US\$49.95/£28.99.
- ANALYSIS OF PHYLOGENETICS AND EVOLUTION WITH R.  
E. Paradis.  
New York: Springer-Verlag,  
2006, pp. xii + 211,  
US\$49.95.
- COLLADA. Sailing the Gulf of 3D Digital Content Creation.  
R. Arnaud and M.C. Barnes.  
Wellesley, Massachusetts:  
A.K. Peters, 2006, pp. xv + 237,  
US\$49.00.
- EXPERIMENTAL DESIGNS: EXERCISES AND SOLUTIONS.  
D.G. Kabe and A.K. Gupta.  
New York: Springer-Verlag, 2007,  
pp. viii + 295, US\$59.95.
- FIRST STEPS FOR MATH OLYMPIANS: USING THE AMERICAN MATHEMATICS COMPETITIONS.  
J.D. Faires.  
Washington, D.C.: The Mathematical Association of America, 2006,  
pp. vii + 305, US\$46.50.
- PATTERN RECOGNITION AND MACHINE LEARNING.  
C.M. Bishop.  
New York: Springer-Verlag, 2006,  
pp. xx + 738, US\$74.95.
- PREDICTION, LEARNING AND GAMES.  
N. Ceas-Bianch and G. Lugasi.  
Cambridge University Press, 2006,  
pp. xii + 394, £35.00/US\$65.00.
- PROBABILITY AND RANDOM PROCESSES.  
V. Krishnan.  
Chichester, U.K.: Wiley, 2006,  
pp. xiii + 723, £73.95.
- PROBLEMS AND SOLUTIONS IN BIOLOGICAL SEQUENCE ANALYSIS.  
M. Borodovsky and S. Ekisheva.  
Cambridge University Press, 2006, pp. xiv + 346,  
£48.00/US\$85.00 Cloth; £22.99/US\$39.99 Paper.
- RANDOM PROCESSES IN PHYSICS AND FINANCE.  
M. Lax, W. Cai and M. Xu.  
Oxford University Press, 2006, pp. xiii + 321, £49.95.
- REAL-TIME VOLUME GRAPHICS.  
K. Engel, M. Hadwiger, J.M. Kniss, C. Rezk-Salama and D. Weiskopf.  
Wellesley, Massachusetts: A.K. Peters, 2006,  
pp. xvii + 497, US\$64.00.
- STATISTICS. The Art and Science of Learning from Data, Instructor's Edition.  
A. Agresti and C. Franklin.  
Upper Saddle River, New Jersey: Pearson/Prentice Hall,  
2007, pp. xxvii + 745 + CD, US\$108.94.
- THE GREAT  $\pi/e$  DEBATE. Which is the Better Number?  
C. Adams and T. Garrity.  
Washington, D.C.: The Mathematical Association of America, 2007, DVD, US\$24.95.
- THE IMMERSED INTERFACE METHOD. NUMERICAL SOLUTIONS OF PDES INVOLVING INTERFACES AND IRREGULAR DOMAINS.  
Z. Li and K. Ito.  
Philadelphia: Society for Industrial and Applied Mathematics, 2006, pp. xvi + 332.
- THE LANCZOS AND CONJUGATE GRADIENT ALGORITHMS. From Theory to Finite Precision Computations.  
G. Meurant.  
Philadelphia: Society for Industrial and Applied Mathematics, 2006, pp. xv + 365.
- UNDERSTANDING AND IMPLEMENTING THE FINITE ELEMENT METHOD.  
M.S. Gockenbach.  
Philadelphia: Society for Industrial and Applied Mathematics, 2006, pp. xvi + 363.

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- Byrne, C.L. Signal Processing: A Mathematical Approach. (G.C. Goodwin) p. 13.
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- Carroll, R.J., Ruppert, D., Stefanski, L.A. and Crainiceanu, C.M. Measurement Error in Nonlinear Models. A Modern Perspective, 2nd edition. (P. Prescott) p. 48.
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- Dorofeev, S. and Grant, P. Statistics for Real Life Sample Surveys: Non-Simple-Random Samples and Weighted Data. (D.J. Hand) p. 48.
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- Everitt, B.S. and Hothorn, T. A Handbook of Statistical Analyses Using R. (P. Marriott) p. 43.
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- Galambos, J. and Simonelli, I. Products of Random Variables. Applications to Problems of Physics and to Arithmetical Functions. (J.R. Leslie) p. 8.
- Gamerman, D. and Lopes, H.F. Markov Chain Monte Carlo. Stochastic Simulation for Bayesian Inference, 2nd edition. (C.M. O'Brien) p. 45.
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- Hand, D.J. Information Generation. How Data Rule Our World. (A.M. Herzberg) p. 40.
- Hand, D.J. and Herzberg, A.M. (Eds.). Selected Statistical Papers of Sir David Cox. Volume I: Design of Investigations, Statistical Methods and Applications; Volume II: Foundations of Statistical Inference, Theoretical Statistics, Time Series and Stochastic Processes. (V.T. Farewell) p. 2.
- Hinkelmann, K. and Kempthorne, O. Design and Analysis of Experiments: Volume 2. Advanced Experimental Design. (D.R. Cox) p. 47.
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