REVIEWS


Contents:
1. A brief history of chance
2. Tossing coins and having babies
3. Dice
4. Gambling for fun: Lotteries and football pools
5. “Serious gambling”: Roulette, cards, and horse racing
6. Balls, birthdays, and coincidences
7. Conditional probability and the Reverend Thomas Bayes
8. Puzzling probabilities
9. Taking risks
10. Statistics, statisticians and medicine
11. Alternative therapies: Panaceas or placebos?
12. Chance, chaos, and chromosomes

Epilogue

Readership: Anyone who likes to think about probabilities

This is a fascinating book. Not only does it discuss the topics given in the Contents in a most interesting way, but it has a wide variety of photos and drawings, including these examples: an astragalus, a detail from a Holbein painting, cricketers Bradman and Hammond, Nijinsky (the horse!), Florence Nightingale, R.A. Fisher paddling and a number of amusing cartoons. I have a couple of minor grumbles. I do not know what “[cricket] is to baseball and soccer, say, as Pink Floyd is to the Spice Girls” (p. 21) means; and the “choice” problem of p. 130 appears to be an (uncredited) revision of “The General’s Dilemma”, devised, according to my colleague R. Wardrop in his 1995 text Statistics: Learning in the Presence of Variation, by two psychologists called Kahneman and Tversky (see K. McKean Discover Magazine, 1985). Grumbles aside, this book would make a great present!

University of Wisconsin
Madison, U.S.A.

N.R. Draper


Contents:
1. Introduction
2. Ordinary differential and difference equations
3. Partial differential equations
4. Variational principles
5. Random systems
6. Finite differences: Ordinary differential equations
7. Finite differences: Partial differential equations
8. Finite elements
9. Cellular automata and lattice gases
10. Function fitting
11. Transforms
12. Architectures
13. Optimization and search
14. Clustering and density estimation
15. Filtering and state estimation
16. Linear and non-linear time series

APPENDIX 1 : Graphical and Mathematical Software
APPENDIX 2 : Network Programming
APPENDIX 3 : Benchmarking
APPENDIX 4 : Problem Solutions

Readership: Engineers and scientists working with mathematical models

The book contains a wealth of basic ideas and methods of the fantastic world of mathematical modeling. These are presented in a compact and self-contained way, and are accompanied by useful algorithms and references for further reading. The book is divided into three main parts: analytical models, numerical models and observational models. Typical topics in the first part are difference and differential equations, variational calculus, ... . The second part is on numerical methods such as finite differences, finite elements, ... . The third deals with data-based modeling techniques such as curve fitting,
filtering, time series, ... Each section has a set of problems and the solutions are included at the end of the book. The book is a good introduction to the subject and will serve engineers, mathematicians, physicists, ... in their modeling work. It is a pity (but of course unavoidable) that several interesting topics have to be covered in just a few pages.

Limburgs Universitair Centrum
Diepenbeek, Belgium
N.D.C. Veraverbeke

RETHINKING THE FOUNDATIONS OF STATISTICS
J.B. Kadane, M.J. Schervish and T. Seidenfeld.
Cambridge University Press, 1999, pp. x + 388, £42.50/US$64.95 Cloth; £15.95/US$24.95 Paper.

Contents:
PART 1 : Decision Theory for Co-operative Decision Making
PART 2 : The Truth about Consequences
PART 3 : Non-co-operative Decision Making, Inference, and Learning with Shared Evidence

Readership: Philosophers concerned with decision theory, probability and statistics; statisticians, mathematicians and economists

This book is in the Cambridge Studies in Probability, Induction and Decision Theory series. It contains sixteen previously published essays on open issues for Bayesian decision theory and statistics, with the aim being 'to understand better the scope and limitations of current Bayesian theory with the goal of contributing to its positive growth'. The book covers four principal themes: co-operative non-sequential decisions; the representation and measurement of 'partially ordered' preferences; non-co-operative, sequential decisions; and pooling rules and Bayesian dynamics for sets of probabilities.

As with any collection, the chapters differ in their depth and complexity. However, this will be of interest to anyone concerned with the foundations of probability and statistics.

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

D.J. Hand

PHYSICS FROM FISHER INFORMATION: A UNIFICATION

Contents:
0. Introduction
1. What is Fisher information?
2. Fisher information in a vector world
3. Extreme physical information
4. Derivation of relativistic quantum mechanics
5. Classical electrodynamics
6. The Einstein field equation of general relativity
7. Classical statistical physics
8. Power spectrum 1/f noise
9. Physical constants and the 1/x law
10. Constrained-likelihood quantum measurement theory
11. Research topics
12. Summing up

APPENDIX A : Solutions common to Entropy and Fisher I-Extremization
APPENDIX B : Crâmer-Rao Inequalities for Vector Data
APPENDIX C : Crâmer-Rao Inequality for an Imaginary Parameter
APPENDIX D : Simplified Derivation of the Schroedinger Wave Equation
APPENDIX E : Factorization of the Klein-Gordon Information
APPENDIX F : Evaluation of Certain Integrals
APPENDIX G : Schroedinger Wave Equation as a Non-relativistic Limit
APPENDIX H : Non-uniqueness of Potential A for Finite Boundaries

Readership: Final-year undergraduates and researchers in all areas of physics; people interested in an unconventional approach to the unification of physical principles

The author aims "to develop a theory of measurement that incorporates the observer into the phenomena under measurement." Instead of Shannon or Boltzmann entropy he uses R.A. Fisher's information, I, to set up a theory of physical law which he calls the Principle of Extreme Physical Information (EPI). We read, "I is at the same time (i) a thermodynamic measure of disorder and (ii) a universal measure of information whose variation gives rise to most (perhaps all) of physics."

Statisticians may be perturbed by his treatment of certain statistical concepts, for example, when discussing the relationship of Fisher I to Kullback-Leibler entropy, and by his construction of concepts such as Fisher temperature and Fisher time. Chapter 12 gives a detailed overview of the earlier chapters. There are some interesting, unfamiliar references (with the standard form for physicists, i.e. without the title of the paper). Also, the book is illustrated with the author's drawings of John A. Wheeler, R.A. Fisher, Léon Brouin and the author. People who knew Fisher may have difficulty in recognizing him and will wonder how he would have received the book.

University of St. Andrews
St. Andrews, U.K.

A.W. Kemp

THE CONCEPT OF PROBABILITY IN STATISTICAL PHYSICS

Contents:
1. The neo-Laplacian approach to statistical mechanics
2. Subjectivism and the ergodic approach
3. The Haar measure
4. Measure and topology in statistical mechanics
5. Three solutions

APPENDIX I : Mathematical Preliminaries
APPENDIX II : On the Foundations of Probability
APPENDIX III : Probability in Non-equilibrium Statistical Mechanics

Readership: Philosophers of science, physicists, and mathematicians interested in foundational issues, and historians of science

This book is in the Cambridge Studies in Probability, Induction, and Decision Theory series.

What is probability, as used in statistical mechanics? Indeterminacy has no place in classical physics, in contrast to quantum mechanics, so what does it mean to make an assertion that the probability of an event A is p? The first chapter describes the early history of statistical mechanics up to the work of Gibbs, and reviews E.T. Jaynes's 'ultrasubjectivist' program, arguing that this "fails to provide a general and defensible version of statistical mechanics". The second chapter pursues the historical development after Gibbs, and then presents a more moderate subjectivist approach to statistical mechanics based on ergodic theory. The third chapter explores whether the probabilities used in statistical mechanics can be reduced to other concepts, concluding that in most cases the answer is no. The fourth chapter proposes the idea that stochastic behaviour is the result of instabilities arising from tiny differences in initial conditions — but concludes that this notion cannot replace all of the
probabilistic concepts. Finally, the fifth chapter presents a new version of the subjectivist view, a new way of formulating the ergodic approach, and concludes that Gibbs 'pragmatist approach' provides a highly satisfactory solution.

The mathematical level is high, with the author arguing that attempts to reduce material of the kind presented here to a non-technical level are generally unsuccessful, at best omitting important ideas and at worst introducing errors. On the other hand, he also claims that 'this book is motivated by the wish to democratize science, [to] make the connections between science and other areas of culture more evident, and make scientific ideas available to intelligent non-specialists without unduly popularizing them.' I am tempted to remark that he cannot have it both ways.

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

WAHRSCHENLICHKEITSRECHNUNG. D. Foata and A. Fuchs. Basel: Birkhäuser, 1999, pp. xv + 383, SFr88.00/DM98.00/Ösch716.00 Cloth; SFr42.00/DM48.00/Ösch351.00 Paper.

Contents:
1. Die Sprache der Wahrscheinlichkeiten
2. Ereignisse
3. Wahrscheinlichkeitsräume
4. Diskrete Wahrscheinlichkeiten. Abzählungen
5. Zufallsvariable
6. Bedingte Wahrscheinlichkeit, Unabhängigkeit
7. Diskrete Zufallsvariable. Gebräuchliche Verteilungen
8. Erwartungswerte. Charakteristische Werte
9. Erzeugende Funktionen
11. Erwartungswerte. Absolut stetige Verteilungen
13. Erzeugende Funktionen der Momente. Charakteristische Funktionen
14. Die wichtigsten (absolut stetigen) Wahrscheinlichkeitsverteilungen
15. Verteilungen von Funktionen einer Zufallsvariable
16. Stochastische Konvergenz
17. Gesetze der grossen Zahlen
18. Zentrale Rolle der Normalverteilung. Zentraler Grenzwertsatz
19. Gesetz von iterierten Logarithmus
20. Anwendungen der Wahrscheinlichkeitsrechnung

Readership: Teachers and students in probability

This book is a translation into German of the original French text Calcul des Probabilités, Cours et exercices corrigés, Masson, Paris, 1996, by the same authors. It is a good textbook for the teaching of probability theory in the second year of mathematics at university level. The first four chapters deal with discrete probability. To make the step to non-discrete probability, some measure and integration theory is given in Chapters 10 and 11. The core of the book, Chapters 16 to 19, is on convergence, laws of large numbers, central limit theorems and laws of iterated logarithm. The book is very good for teaching a probability course on a solid basis. Each chapter has a rich choice of exercises and the solutions are worked out at the end of the book.

Contents:
1. Shapes and shape spaces
2. The global structure of shape spaces
3. Computing the homology of cell complexes
4. A chain complex for shape spaces
5. The homology groups of shape spaces
6. Geodesics in shape spaces
7. The Riemannian structure of shape spaces
8. Induced shape-measures
9. Mean shapes and the shape of the means
10. Visualizing the higher dimensional shape spaces
11. General shape spaces

Readership: Probabilists and mathematical statisticians; researchers in astronomy, archaeology, biology and other sciences modeling or interpreting shape data

During the first quarter of this century, much of the research in probability and mathematical statistics centred around the development of probability models for multidimensional data and the derivation of the associated probability distributions needed for statistical inferences based on these models. It has taken until the last quarter of the twentieth century for the shape of a multidimensional set of data to be adequately defined and a suitable mathematical framework for the analysis and application of this concept to be developed. This book provides a thorough coverage of the mathematical foundations of the theory of shape developed during the past twenty-five years by the senior author and his collaborators. The mathematical tools required for the modeling and analysis of shape are different from those usually involved in statistical models, and these may therefore present an extra challenge to some readers. The authors have, however, included considerable detail throughout, hoping thereby to make the text as widely accessible as possible.

The first seven chapters of the book are devoted to the development and analysis of shape spaces themselves. This is followed by derivations of the probability distributions on shape spaces that are induced by various Gaussian and uniform models for the underlying data. An important discussion about concepts and properties of the mean of random shapes are then presented.

This is an exemplary monograph, from an editorial as well as a scholarly perspective. It is a clearly presented unification of many years of research. The numerous figures, charts and simulation displays throughout the book represent considerable effort to clarify the material to the great benefit of the reader. The applications of shape theory that have already been made to astronomy, archaeology and biology forecast the potential value that this volume should have to researchers in many areas for years to come.

University of Washington
Seattle, U.S.A. R. Pyke


Contents:
1. Introduction
2. Basic survey methodology
3. Statistical analysis with survey data
4. Sample weights and imputation
5. Additional issues in variance estimation
6. Cross-sectional analyses
7. Analysis of longitudinal surveys
8. Analyses using multiple surveys
9. Population-based case control studies

APPENDIX A : Surveys Analyzed in this Book
APPENDIX B : Linearization for Implicit Functions of Weighted Sums
APPENDIX C : Restricted Cubic Regression Splines

Readership: Biostatisticians, graduate students in biostatistics

The aim of this book is to describe methods for the design, implementation and analysis of large-scale health surveys, with a brief description of some of the more important surveys conducted in the U.S. today, such as the Current Population Survey, the National Health and Nutrition Examination Survey (NHANES), the National Health Discharge Survey (NHDS), and the National Health Interview Survey (NHIS). The first five chapters briefly cover estimation theory and methods for survey sampling, and include the mathematical formulae for common estimators from different survey designs. The last four chapters provide detailed analyses of different types of surveys, with specific examples taken from well-known U.S. health surveys, and are rich in tables and plots of the data. However, they do not indicate how to account for the nested structure of the surveys, which would be useful for analysts who are unfamiliar with the nesting statement constructs that are needed to estimate variances properly. Including the core SUDAAN programme statements would have been helpful. No prior knowledge of survey sampling is necessary to read the book. There are sufficient good exercises at the end of the chapters to allow use as a graduate student textbook on the subject.

Dartmouth Medical School
Hanover, U.S.A. T.A. Stukel

Contents:
1. Introduction
2. Two-sided tests: Introduction
3. Two-sided tests: General applications
4. One-sided tests
5. Two-sided tests with early stopping under the null hypothesis
6. Equivalence tests
7. Flexible monitoring: The error spending approach
8. Analysis following a sequential test
9. Repeated confidence intervals
10. Stochastic curtailment
11. General group sequential distribution theory
12. Binary data
13. Survival data
14. Internal pilot studies: Sample size re-estimation
15. Multiple endpoints
16. Multi-armed trials
17. Adaptive treatment assignment
18. Bayesian approaches
19. Numerical computations for group sequential tests

Readership: Researchers, clinical-trial statisticians

This book represents a comprehensive presentation of group sequential methods. Written by active researchers in this area, it provides an ideal source for those wishing an introduction to the area and for those who desire a clear outline of specific topics or methods. It should quickly become a standard reference both for those wishing to apply the methods and for researchers in the area, groups which one hopes are not mutually exclusive.

The extent of coverage of various topics broadly reflects current usage. The authors have avoided undue emphasis on their own considerable contributions to the field, and the discussion of each topic appears to be well balanced. The discussion of Bayesian methods might be regarded by some as rather brief, but the references do direct the reader to the key publications on the topic.

All in all, this is a very welcome book.

University College
London, U.K.
V.T. Farewell


Contents:
1. Structural models for data
2. Least squares methods
3. Combinatorial probability
4. Other probability models
5. Discrete random variables I: The hypergeometric process
6. Discrete random variables II: The Bernoulli process
7. Random vectors and random samples
8. Maximum likelihood estimates for discrete models
9. Continuous random variables I: The gamma and beta families
10. Continuous random variables II: Expectations and the normal family
11. Continuous random variables
12. Sampling statistics for the linear model
13. Representing distributions

Readership: Undergraduate and graduate students, teachers

This is an unusual book. It is an introductory text to Mathematical Statistics; however, it covers multiple regression, two-way layouts and logistic regression, all in the first chapter. Terrell uses a hands-on approach to the subject without compromising the mathematical details. He insists on the unity of probability and statistics, whilst still being guided by the assumption that the latter precedes the former. There are many exercises at the end of each chapter, most of them interesting. The book is very easy and enjoyable to read, though I was surprised to find no reference to resampling methods, which would fit well in the author’s scheme. Nevertheless, it offers a refreshing point of view in an area which has been dominated by texts following almost exclusively by theoretical expositions.

University of Oxford
Oxford, U.K.
M.C. Borja


Contents:
1. Introductory statistical concepts
2. The discrete version of Bayes theorem
3. Models with a single unknown parameter
4. The expected utility hypothesis
5. Models with several unknown parameters
6. Prior structures, posterior smoothing and Bayes-Stein estimation

Readership: Graduate students in statistics, interdisciplinary research specialists with interests in a variety of areas

The text begins with an overview of “non-Bayesian” statistics at quite an advanced level. For example, in the first chapter, we find the EM algorithm, the likelihood principle and the large sample theory for likelihood procedures. From there, the authors turn to Bayesian theory. They present the basic ideas, for example prior, posterior, predictive distributions and expected utility. However, most of the book consists of significant applications, both theoretical and practical. In fact, the material develops as interplay between the latter two. Practical examples include: prediction of psychotic patients, inference for genotype frequencies, remote sensing and
online quality monitoring. Theoretical examples include: non-linear regression, the Kalman filter, simultaneous estimation of normal means. Their discussion pays due regard in passing to MCMC, the Laplace approximation and important auxiliary material needed for implementing the methods. I found the “self-study” questions novel, challenging and worthwhile. Overall, this book is a very welcome and original contribution to the literature on Bayesian statistics. It will complement well more specialized books on this topic.

University of British Columbia
Vancouver, Canada

J.V. Zidek


Contents:
PART I : Introduction
1. Looking forward and back
2. Introduction to regression
3. Introduction to smoothing
4. Bivariate distributions
5. Two-dimensional plots
PART II : Tools
6. Simple linear regression
7. Introduction to multiple linear regression
8. Three-dimensional plots
9. Weights and lack of fit
10. Understanding coefficients
11. Relating mean functions
12. Factors and interactions
13. Response transformations
14. Diagnostics I: Curvature and non-constant variance
15. Diagnostics II: Influence and outliers
16. Predictor transformations
17. Model assessment
PART III : Regression Graphics
18. Visualizing regression
19. Visualizing regression with many predictors
20. Graphical regression
PART IV : Logistic Regression and Generalized Linear Models
21. Binomial regression
22. Graphical and diagnostic methods for logistic regression
23. Generalized linear models
APPENDIX : Arc

Readership: Regression practitioners

The authors have previously written these four books:

The present volume includes: (a) “Virtually all the material in [1], ... but none of the prose,” (b) “Nearly all of [2], ... little of the prose,” (c) “A low-level introduction to [3].” (d) Also, [4] “provides the core of the present volume.”

This excellent book places an emphasis on viewing data graphically, using special software (Arc) that can be downloaded free from an Internet site. Most of the three hundred figures can thus be reproduced by the reader.

University of Wisconsin
Madison, U.S.A.

N.R. Draper

REGRESSION ANALYSIS BY EXAMPLE, 3rd edition.

Contents:
1. Introduction
2. Simple linear regression
3. Multiple linear regression
4. Regression diagnostics: Detection of model violations
5. Qualitative variables as predictors
6. Transformation of variables
7. Weighted least squares
8. The problem of correlated errors
9. Analysis of collinear data
10. Biased estimation of regression coefficients
11. Variable selection procedures
12. Logistic regression

Readership: Data analysts, scientists, engineers, statisticians

This third edition of Regression Analysis by Example is aimed at anyone who needs to fit equations to data to investigate underlying relationships. The approach is practical, assumes the availability of suitable model fitting statistical software, and is more concerned with the investigation and interpretation of models than with the algebra of the fitting process.

This edition is a major rewrite of earlier editions, with the material being extended by the addition of a new introduction and a complete chapter on logistic regression. More attention is given to regression diagnostics and to the use of transformations and weighted least squares. The reorganized chapters on correlated errors, collinear data, and variable selection procedures have been extended to include recent developments. All chapters now conclude with an exercise section.

One useful and novel feature of the book is that it has its very own website based at Cornell University. The abundance of sets of data used to illustrate the methods described in the text are all available and can be downloaded from this site. Overall, the book is very readable and effectively meets the needs of its target audience.

University of Southampton
Southampton, U.K.

P. Prescott
Mixed Models Notation

Contents:
1. Introduction
2. Normal mixed models
3. Generalised linear mixed models (GLMMs)
4. Mixed models for categorical data
5. Multi-centre trials and meta-analyses
6. Cross-over trials
7. Repeated measures data
8. Other applications of mixed models
9. Software for fitting mixed models

Readership: Applied statisticians and bio-statisticians, medical scientists, teachers and students of statistics courses

Traditionally, the techniques of analysis of variance and regression analysis have as a basic assumption that the error terms are independently and identically distributed. Mixed models are an important alternative approach to modelling which allow a relaxation of the independence assumption and accommodate more complicated data structures in a flexible way. Some benefits to be gained from using mixed models include an increase in the presence of estimates and the ability to make wider inferences.

This book has been written to provide the reader with a thorough understanding of the concepts of mixed models. The authors’ intention is to put all types of mixed models into a general framework and to consider the practical implications of their use.

The SAS package has been used extensively throughout the text to analyze the majority of the examples. However, a brief review of other software available at the time of writing (MLWin, BUGS, Genstat, BMDP, MIXOR) for fitting mixed models is presented; together with details of time of writing (MLWin, BUGS, Genstat, BMDP, MIXOR) for fitting mixed models is presented; together with details of relevant webpages where further details may be obtained.

The text is well-written, easy to read and once started, is difficult to put down.

CEFAS Lowestoft Laboratory
Lowestoft, U.K. C.M. O’Brien

LINEAR MODELS IN STATISTICS. A.C. Rencher.

Contents:
1. Introduction
2. Matrix algebra
3. Random vectors and matrices
4. Multivariate normal distribution
5. Distribution of quadratic forms in y
6. Simple linear regression
7. Multiple regression: Estimation
8. Multiple regression: Tests of hypotheses and confidence intervals
9. Multiple regression: Model validation and diagnostics
10. Multiple regression: Random x’s
11. Analysis of variance models
12. One-way analysis of variance: Balanced case
13. Two-way analysis of variance: Balanced case
15. Analysis of covariance
16. Random effects models and mixed effects models

APPENDIX A : Answers and Hints to Selected Problems
APPENDIX B : Data Sets and SAS Files

Readership: Students at all levels, researchers

The character of this volume seems to fit roughly between Seber’s Linear Regression Analysis and Hocking’s Methods and Applications of Linear Models [Short Book Reviews, Vol. 17, p. 27]. The emphasis is mostly on the theory, and the author’s stated objective of “clarity of exposition” has certainly been achieved. There are about four hundred and thirty-nine exercises (called “problems”) of which about twenty-two (5%) offer data, taken mostly from other regression books. The one hundred and twelve pages of Appendix A supplement the theory and provide numerical details which add illustration to the examples already in the main body of the text. There is a six-page bibliography (one hundred and thirty-nine references), but no authors’ index. This is a worthy addition to the Wiley regression collection.

University of Wisconsin
Madison, U.S.A.
N.R. Draper

STATISTICAL MODELLING USING GENSTAT.

Contents:
1. Introduction
2. Review of statistical concepts
3. Introduction to GENSTAT
4. Linear regression with one explanatory variable
5. One-way analysis of variance
6. Multiple linear regression
7. The analysis of factorial experiments
8. Experiments with blocking
9. Binary regression
10. What are generalized linear models?
11. Diagnostic checking
12. Loglinear models for contingency tables
13. Further data analysis
Postscript

Readership: Students of statistics

This book offers an easy-to-read coverage of the uses and interpretation of basic statistical methods, covering both the general linear model (including analysis of variance and regression) and the generalized linear model. The methods are presented in the context of the software package GENSTAT 5 for Windows and the text proceeds through the analysis of seventy-eight sets of data (each accessible from the web). There are numerous exercises interspersed throughout the text with solutions at the end of the book. The topics within the book are based on the Open University’s distance teaching module M346, Linear Statistical Modelling and hence, are suitable for private study.

The mathematical prerequisites for using the book are minimal (appreciation of mathematical formulæ and graphs) and neither calculus nor linear algebra is required. Some familiarity with using a computer is necessary in order to gain the most benefit from the text, and some previous experience of using a statistical software package would be advantageous. Disappointingly for a book on statistical modelling, the authors neither introduce the student to computer-intensive methods nor bootstrap techniques — both of which will, without a doubt, be required once the student progresses from classroom exercises to real-world modelling applications.

CEFAS Lowestoft Laboratory
Lowestoft, U.K. C.M. O’Brien
THEORY OF MULTIVARIATE STATISTICS

Contents:
1. Linear algebra
2. Random vectors
3. Gamma, Dirichlet, and F distributions
4. Invariance
5. Multivariate normal
6. Multivariate sampling
7. Wishart distributions
8. Tests on mean and variance
9. Multivariate regression
10. Principal components
11. Canonical correlations
12. Asymptotic expansions
13. Robustness
14. Bootstrap confidence regions and tests

APPENDIX A: Inversion Formulas
APPENDIX B: Multivariate Cumulants
APPENDIX C: S-Plus Functions

Readership: Mathematical statisticians, graduate students

This is an excellent graduate level text book with several challenging problems in the exercises. An outstanding feature of this book is the presentation style. The authors' presentations of core statistical ideas, important formulae, the scope and the limitations of the topics create a curiosity to continue reading. The authors must have definitely thought through to cut down the unnecessary details to focus on the main results. The material is mathematically very rigorous. The references cite several up-to-date journal articles and other books. Unlike many other multivariate statistics books, this book offers a great exposure of robust inference in the multivariate framework. The other outstanding items include asymptotic expansions, bootstrap inference and S-Plus functions.

The minimum background needed to read this book is the knowledge gained in a sequence of mathematical statistics courses. For the sake of readers who are unfamiliar with linear algebra, the authors have presented all the necessary material in Chapter 1 itself. This can be used as a text book for a one-semester theoretical graduate course. This is not suitable for an applied multivariate statistics course. There is no statistical table, for example.

However, the researchers and graduate students who wish to publish in journals will undoubtedly gain a lot of knowledge and insight of the core multivariate statistical ideas and techniques by reading this well-written book. I enjoyed reading this book and learned a lot!

University of Colorado
Denver, U.S.A.
R. Shanmugam

LOCAL REGRESSION AND LIKELIHOOD

Contents:
1. The origins of local regression
2. Local regression methods
3. Fitting with LOCFIT
4. Local likelihood estimation
5. Density estimation
6. Flexible local regression
7. Survival and failure time analysis
8. Discrimination and classification
9. Variance estimation and goodness-of-fit
10. Bandwidth selection
11. Adaptive parameter choice
12. Computational methods
13. Optimizing local regression

APPENDIX A: Installing LOCFIT in R, S and S-Plus
APPENDIX B: Additional Features: LOCFIT in S
APPENDIX C: C-LOCFIT
APPENDIX D: Plots from C-LOCFIT

Readership: Research and applied statisticians, graduate students in statistics, others interested in nonparametric regression techniques

This book is another well-written monograph in the popular area of data smoothing and local nonparametric estimation. The emphasis of the monograph is on both the methodology and applications from a wide range of fields. The author covers traditional aspects of local smoothing (bias-variance balance, bandwidth choice, confidence bounds) as well as topics which are not often discussed in the textbooks on nonparametric regression (for example, survival analysis and estimation of hazard rates). Numerous examples in the book are analyzed with LOCFIT, a software package which may be run within an S, R or S-Plus environment, or as a stand-alone application, and which is available through the World Wide Web from the author's homepage.

SmithKline Beecham Pharmaceuticals
Collegeville, U.S.A.
S. Leonov

SIMULATION: A Modeler's Approach
J. R. Thompson.

Contents:
1. The generation of random numbers
2. Random quadrature
3. Monte Carlo solutions of differential equations
4. Markov chains, Poisson processes, and linear equations
5. SIMEST, SIMDAT and pseudoreality
6. Models for stocks and derivatives
7. Simulation assessment of multivariate and robust procedures in statistical process control
8. Noise and chaos
9. Bayesian approaches
10. Resampling-based tests
11. Optimization and estimation in a noisy world
12. Modelling the AIDS epidemic: Exploration, simulation, and conjecture

Readership: Scientists with puzzling data

The reader is drawn into the book immediately via the Preface, where the well-known three-door quiz show problem is discussed and illuminated by a small simulation program. The discussion is attractively plain and straightforward throughout the book, and is illustrated by many diagrams. This is a very readable and user-friendly book, and is highly recommended. (I note, in passing, a couple of typographical errors on p. 110, two lines from the bottom, and p. 267, four lines from the bottom.)

University of Wisconsin
Madison, U.S.A.
N.R. Draper
LATENT VARIABLE MODELS AND FACTOR ANALYSIS.
London: Arnold / New York: Oxford University Press,

Contents:
1. Basic ideas and examples
2. The general linear latent variable model
3. The normal linear factor model
4. Binary data: Latent trait models
5. Polytomous data: Latent trait models
6. Latent class models
7. Models and methods for manifest variables of mixed type
8. Relationships between latent variables

Readership: Statisticians, psychometricians, social science researchers

This is a completely reworked version of the book of the same title originally published by the first author in 1987 in Griffin’s Statistical Monograph Series. Existing material has been updated, the structure has been revised, and three chapters of new material have been added: Chapter 2 presents a general framework which includes subsequent models as special cases and which links these models to the generalized linear model of statistics; Chapter 7 gives recent methods for mixed types of variables; and Chapter 8 covers confirmatory factor analysis and linear structural relationships.

The outcome is a very elegant and original treatment of latent variable models, which brings a relatively unfamiliar topic firmly into the mainstream of statistical theory. While much of the material is necessarily terse, the coverage is comprehensive and up-to-date. Sufficient references enable the interested reader to follow up on detail, and about one third of the over two hundred and seventy references cites work published in the last decade. There are plenty of numerical examples, and access is provided to specialized software via the Arnold website. This book should appeal to newcomer and old hand alike.

University of Exeter
Exeter, U.K.
W.J. Krzanowski

ELEMENTS OF SAMPLING THEORY AND METHODS.
Z. Govindaraju. Upper Saddle River, New Jersey:

Contents:
1. Preliminaries
2. Varying-probability sampling
3. Simple random sampling
4. Estimation of the sample size
5. Stratified sampling
6. Ratio estimators
7. Regression estimators
8. Systematic sampling
9. Cluster sampling
10. Varying-probability sampling: Without replacement
11. Two-phase and repetitive sampling
12. Two-stage sampling
13. Non-sampling errors
14. Bayesian approach for inference in finite populations
15. The jackknife method
16. The bootstrap method
17. Small-area estimation
18. Imputations in surveys

Readership: Practitioners of sample surveys, graduate students

This text covers an extensive amount of material from the simplest of sampling designs to modern computationally intensive methods using the jackknife and bootstrap procedures. The claim is that the book is suitable for a one-semester graduate level course; but this is ambitious, unless the students are expected to read much of the detail in their own time. The book covers all the usual concepts of design and estimation methods and includes many proofs of the main results. In addition, new material on the Bayesian approach, the jackknife and bootstrap methods are included as well as chapters on small area estimation and modern imputation methods. Each chapter contains illustrative numerical examples and concludes with a problem section for which answers are provided at the end of the book.

The approach is very much based on theorems, lemmas, proofs and corollaries, with extensive reference to well-known and recently published research. This leads to a well-structured and logical development of most, if not all of the results that a sample survey researcher or practitioner would wish to know. Also included is a comprehensive list of approaching two hundred references, many of which appeared in the late 80’s or early 90’s. The text could be used either as a course text, requiring basic algebra and statistical inference, or as an initial reference source.

University of Southampton
Southampton, U.K.
P. Prescott

STRATEGIES FOR QUASI-MONTE CARLO.

Contents:
1. Introduction
2. Smoothing
3. Generating Poisson processes
4. Permuting order statistics
5. Generating Bernoulli trials
6. Generating Gaussian processes
7. Smoothing summation
8. Smoothing variate generation
9. Analysis of variance
10. Bernoulli trials: Examples
11. Poisson processes: Auxiliary matter
12. Background on deterministic QMC
13. Optimization
14. Background on randomized QMC
15. Pseudocodes

Readership: Applied mathematicians and operations researchers with some experience with Monte Carlo or quasi-Monte Carlo

This book presents in an erudite but informal style a broad picture of the author’s ideas on the topic of randomized quasi-Monte Carlo. By carefully distinguishing a small number of important variables, and other less important variables, the methods (presented in the form of pseudocode) proposed in this book allow beating the curse of dimensionality in many applications. Variance decomposition and quantification is emphasized throughout. Each problem can be attacked by a combination of techniques varying from Latin hyper- (or super-) cubes, via stratification, importance sampling, Russian roulette, to naive Monte Carlo. Examples from queuing, finance and optimization illustrate the ideas.

Katholieke Universiteit Leuven
Heverlee, Belgium
R. Boel

Contents:
1. Introduction
2. Predictability
3. Martingales
4. Decompositions and quadratic variation
5. Martingale characterizations
6. Generalizations of martingales
7. Weak convergence of set-indexed processes
8. Limit theorems for point processes
9. Martingale central limit theorem

Readership: Probabilists and spatial statisticians

In a small, elegant volume, the idea of set-indexed stochastic process is combined with the theory of martingales. Motivations come from spatial statistics and stochastic geometry. This “foretaste of the subject” is based mostly on a series of papers by the authors and their co-authors. Finding the “right” definitions is paramount. Among the results are stopping theorems, extensions of Doob-Meyer decomposition, existence of quadratic variation, versions of localization and of weak convergence, and finally set-indexed martingale central limit theorems. The considerable bibliography includes key works on stochastic geometry, multiparameter processes, random fields, and related topics, as well as set-indexed martingales. This state-of-the-art monograph will be a valuable resource and stimulus for further work in the area.

University of British Columbia Vancouver, Canada P.E. Greenwood


Contents:
1. An overview
2. Continuous-state branching processes and superprocesses
3. The genealogy of Brownian excursions
4. The Brownian snake and quadratic superprocesses
5. Exit measures and the non-linear dirichlet problem
6. Polar sets and solutions with boundary blow-up
7. The probabilistic representation of positive solutions
8. Lévy processes and the genealogy of general continuous-state branching processes

Readership: Postgraduate students and researchers in probability theory

The main topic of the book is probabilistic modeling of expert systems. The authors cover the huge array of related topics starting from various interpretations of the concept of probability and Kolmogorov’s axioms and wandering through machine learning, neural networks, artificial intelligence, hidden Markov chains, EM algorithms, Gibbs sampling. Bayesian conjugate analysis, hyper Markov laws, etc. Frequently, the depth of discussion and reasoning is replaced by an extensive referencing which results in thirty pages of bibliography and author index.

SmithKline Beecham Pharmaceuticals Collegeville, U.S.A. V.V. Fedorov


Contents:
1. Introduction: Donsker’s theorem, metric entropy, and inequalities
2. Gaussian measures and processes, sample continuity
3. Foundations of uniform central limit theorems: Donsker classes
4. Vapnik-Cervonenkis combinatorics
5. Measureability
6. Limit theorems for Vapnik-Cervonenkis and related classes
7. Metric entropy, with inclusion and bracketing
8. Approximation of functions and sets
9. Sums in general Banach spaces and invariance principles
10. Universal and uniform central limit theorems
11. The two-sample case, the bootstrap and confidence sets
12. Classes of sets or functions too large for central limit theorems
Readership: Probabilists, mathematical statisticians

The book gives an exposition on the central limit theory for independent and identically distributed random variables in its full generality: the convergence of the empirical process, uniformly over large classes of functions. The book grew out of the author’s 1984 St.-Flour lecture notes but it is also updated with some results and references from the nineties. The book is very mathematical and the proofs are carefully worked out. Each of the twelve chapters ends with a list of interesting notes, a set of exercises and a bibliography. It is for certain that this will soon be a classic piece of work in the empirical process literature.

Diepenbeek, Belgium
N.D.C. Veraverbeke

AN INTRODUCTION TO MATHEMATICAL FINANCE:

Contents:
1. Probability
2. Normal random variables
3. Geometric Brownian motion
4. Interest rates and present value analysis
5. Pricing contracts via arbitrage
6. The arbitrage theorem
7. The Black-Scholes formula
8. Valuing by expected utility
9. Exotic options
10. Beyond geometric Brownian motion models
11. Autoregressive models and mean reversion

Readership: Undergraduate students in mathematics or engineering

This book provides a short and lucid introduction to the main ideas in modern mathematical finance. The author, Sheldon Ross, has produced a very accessible text. In the first three chapters he lays down the necessary probability foundations clearly and concisely. Chapter 4 deals with some elementary ideas in compound interest. The next two chapters discuss the important no-arbitrage principle and demonstrate its connection with the risk neutral pricing result. The Black-Scholes formula is derived in Chapter 7. The remainder of the book deals with extensions and refinements to the basic models.

This is an excellent introduction to the subject since the author has deliberately avoided the use of heavy mathematical machinery that can intimidate a beginning student. The book is also lean on institutional detail and this permits the author to focus on the essentials. Ross has concentrated on a few important basic concepts rather than providing a comprehensive introduction to the subject. There are plentiful exercises at the end of each chapter which reinforce the main ideas. The book is ideally suited for self-study and provides a very accessible entry point to this fascinating field.

University of Waterloo
Waterloo, Canada
P.P. Boyle

PRICING AND HEDGING OF DERIVATIVE SECURITIES.

Contents:
Introduction
1. Stochastic processes
2. Itô calculus
3. Gaussian processes
4. Securities and trading strategies
5. The martingale valuation principle
6. The Black-Scholes model
7. Gaussian term structure models

APPENDIX A : Measure and Probability
APPENDIX B : Lebesgue Integrals and Expectations
APPENDIX C : The Heat Equation

Readership: More quantitative oriented students and researchers interested in modern, mathematical finance

This interesting text gives a very readable introduction to the mathematics of derivative pricing and hedging. The mathematical level is high, despite the fact that the author works in practice. The latter practical background clearly shows itself through the various pedagogical discourses, either through examples or discussions on ramifications of the methodology presented.

I found the author’s style of writing close to perfect: the material presented would make an excellent course. Mathematicians will get a lot out of the book because of the extra practical insight, but also because the author has taken great care to explain the sophisticated mathematics in a very clear and concise way. The more applied reader may find this text a possible step to get on the high level of mathematical sophistication present (partly needed) in modern finance. In order to help this category of potential readers, about eighty pages of mathematical background material (including measure theory) is included. This makes the text close to self-contained.

I personally would have liked more material on the core subject; there are numerous excellent and very readable texts out there, catering for the mathematical background. All in all, I highly recommend this text to those prepared to invest the necessary time and effort for learning the subject of derivatives. It will no doubt become one of my favourites.

ETH–Zürich
Zürich, Switzerland
P.A.L. Embrechts

INTRODUCTION TO OPTION PRICING THEORY.

Contents:
1. Stochastic integration
2. Itô’s formula and its applications
3. Representation of square integrable martingales
4. Stochastic differential equations
5. Girsanov’s theorem
6. Option pricing in discrete time
7. Introduction to continuous time trading
8. Arbitrage and equivalent martingale measures
9. Complete markets
10. Black and Scholes theory
11. Discrete approximations
12. The American options
13. Asset pricing with stochastic volatility
14. The Russian options

Readership: Students and researchers in probability, statistics, applied mathematics, business or economics, who have a background in measure theory and have completed probability theory at the intermediate level

There are now many books on option pricing and the financial markets. They range from the relatively simple, perhaps aimed more at the management school end of the market, to the more mathematically demanding, using measure theoretic notions, stochastic integration, and so on. This book is clearly at the latter end of the continuum,
with the first five chapters being devoted to the mathematical background, before the notions of options, arbitrage, and so on are introduced in Chapter 6. Some of the later chapters present new results.

This book would be suitable for mathematics graduates (the Preface says the book is intended for probabilists) who want a solid introduction to the underlying mathematics of option pricing. It is presented in the theorem-proof style. It does not include any exercises.

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


Contents:
Introduction
1. Arbitrage pricing theory: The one-period model
2. The binomial option pricing model
3. Analysis of the Black-Scholes formula
4. Refinements of the binomial model
5. American-style options, early exercise, and time-optionality
6. Trinomial model and finite difference schemes
7. Brownian motion and Itô calculus
8. Introduction to exotic options: Digital and barrier options
9. Itô processes, continuous-time martingales, and Girsanov's theorem
10. Continuous-time finance: An introduction
11. Valuation of derivative securities
12. Fixed-income securities and the term-structure of interest rates
13. The Heath-Jarrow-Morton theorem and multi-dimensional term-structure models
14. Exponential-affine models
15. Interest-rate options

Readership: Theoreticians, practitioners and postgraduate students of mathematical finance

This is a textbook, though it contains no exercises, on the theory underlying the modeling and risk management of financial derivatives. The authors attempt to link theory with practice, not flinching from pointing out that the theory does not have all the answers. The mathematical style is informal, assuming an understanding of linear algebra and elementary probability, but not requiring a grasp of measure theory. It introduces stochastic calculus. Some background financial knowledge would be helpful. Essentially, the book is divided into two halves, with Chapters 1 to 8 dealing with discrete lattice models and Chapters 9 to 15 with continuous time models.

Despite the recent publicity concerning how physics PhDs can find highly remunerative employment in this area, the authors point out that “financial modeling is very different from modeling in the natural sciences. Unlike physics, where we deal with reproducible experiments with well-defined initial conditions, the models and ideas presented in this book deal with phenomena for which we have only limited information and that are not necessarily reproducible.” To me this seems to pose a challenge perfectly matched to statistical techniques. Overall, it would be worth considering as a text for a postgraduate course on arbitrage pricing theory.

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


Contents:
1. Synthesis problems for control systems and the dynamic programming approach
2. Exact methods for synthesis problems
3. Approximate synthesis of stochastic control systems with small control actions
4. Synthesis of quasi-optimal systems in the case of small diffusion terms in the Bellman equation
5. Control of oscillatory systems
6. Some special applications of asymptotic synthesis methods
7. Numerical synthesis methods
8. Conclusion

Readership: Control theorists

This book studies classes of deterministic and stochastic optimal control problems. The former leads to open-loop solutions whilst the latter depends on feedback solutions. The principal tool used to study these problems is the Dynamic Programming method due to Bellman. Emphasis is placed on approximate synthesis methods leading to finite analytic solutions or, at least, solutions which are simple to implement. The book goes beyond linear quadratic problems (whose solution is well-known) to more general problems, for example, those constraints or those where model parameters are unknown (adaptive control). The book would be interesting to readers seeking insight into dynamic stochastic optimization problems.

University of Newcastle
Newcastle, Australia G.C. Goodwin
MODEL BUILDING IN MATHEMATICAL PROGRAMMING.

Contents:
1. Introduction
2. Solving mathematical programming models
3. Building linear programming models
4. Structured linear programming models
5. Applications and special types of mathematical programming models
6. Interpreting and using the solution of a linear programming model
7. Non-linear models
8. Integer programming
9. Building integer programming models I
10. Building integer programming models II
11. The implementation of a mathematical programming system of planning
12. The problems
13. Formulation and discussions of problems
14. Solutions to problems

Readership: Operational researchers, mathematical programmers

This unique book, now in a fourth revised edition, should be on the shelves, having been read of course by everyone, whether practitioner or teacher, with any interest in mathematical programming. It is devoted entirely to mathematical programming models: linear, non-linear, integer and stochastic. There is no description of any mathematical programming model. The book is in two sections. The first section, Chapters 1 to 11, discusses the use of the different models and, importantly, their management and maintenance. The second section, Chapters 12 to 14, about a third of the text, describes, formulates and gives the solution of twenty-four problems. The level of mathematics needed is minimal; the author carefully explains in words before giving an algebraic formulation. Read and use this text; you will enjoy it as I have done since the first edition.

London School of Economics
London, U.K. S. Powell


Contents:
1. Introduction
2. Consistency
3. Renormalization
4. Rates of convergence
5. Line-search algorithms
6. Ellipsoidal algorithms
7. Steepest-descent algorithms
8. Appendices

Readership: Mathematicians, engineers or statisticians with an interest in optimization

This is a fascinating book which links optimization algorithms with the properties of certain dynamical systems. This link allows one to better understand the optimization algorithms and to ultimately construct more efficient versions of them. Optimization lies at the core of many problems in economics, statistics, engineering and mathematics. Hence, this book should be of interest to a wide audience.

University of Newcastle
Newcastle, Australia G.C. Goodwin

NOTES


This is a volume of quotations which are pertinent to the discipline of statistics. The authors have another dictionary called Mathematically Speaking.

Volume 1. Overview, D. Reed, pp. xii + 108.
Volume 5. Catchment Descriptors, A. Bayliss, pp. x + 130.

In 1975 the Institute of Hydrology in the U.K. issued an influential document, usually called the Flood Studies Report. The present publication from the Institute is a major new contribution replacing the earlier Report. There are five volumes entitled respectively Overview; Rainfall frequency estimation; Statistical procedures for flood frequency estimation; Restatement and application of the Flood Studies Report rainfall-runoff method; Catchment descriptors. While the specific data are from the U.K., the ideas in the Report, many of them highly statistical, will be of wide interest to those concerned with hydrological issues, either directly or for their methodological interest because of the planning and environmental consequences.


From the book cover: "Astronomy is one of the oldest sciences, and one which has repeatedly led to fundamental changes in our view of the world. This book covers the history of our study of the cosmos from pre-history through to a survey of modern astronomy and astrophysics, itself sure to be of interest to future historians of twentieth-century astronomy!"

"It does not attempt to cover everything in depth, but deliberately concentrates on the important themes and topics. These include the Copernican revolution, which led to the challenge of ancient authorities in many areas, not just astronomy, and seventeenth- and eighteenth-century stellar astronomy, at the time subordinated to the study of the solar system, but the source of many important concepts in modern astronomy."

From the book jacket: “Through much of the Scientific Revolution, between 1650 and 1750, Catholic churches were the best solar observatories in the world. Constructed initially to solve the pressing problem of providing an unquestionable date for Easter, the instruments that made the churches’ observatories also threw light on the disputed geometry of the solar system. Within sight of the altar, they subverted Church doctrine about mankin’s place in the universe. Measurements made in the oldest cathedral observatory, San Petronio in Bologna, in the heart of the Papal States, supported Kepler’s revolutionary discovery that neither the sun’s orbit, nor the earth’s, can be a circle, and thus indirectly favored ideas condemned at the trial of Galileo.

“A tale of politically canny astronomers and cardinals with a taste for mathematics, The Sun in the Church explains the unlikely accomplishments of the Church-sponsored observers. It engagingly describes Galileo’s political overreaching, his subsequent trial for heresy, and his slow and steady rehabilitation in the eyes of the Catholic Church. Despite the Church’s prohibition against advocating sun-centered astronomy, Italian clerics managed to teach and advance it. Heilbron describes, with dry wit, the diplomatic discretion on all sides that allowed them to do so.

“The functions of the Church observatories changed with the centuries. As they increased in number, citizens and cities set their clocks by them; at the beginning of the age of iron and steam, railroad schedules were governed by the sun’s movements traced out on cathedral floors. The story of these observatories—chronometers and their visionary and eccentric builders is one of astronomy, Church history, and religious architecture; of complex measurements with limited mathematical tools but inspired determination; and above all, of the many niches, protected and financed by the Catholic Church, in which science and mathematics thrived.

“The Sun in the Church corrects long-held oversimplifications about the hostility between science and religion.”


From the book jacket: “Almost every day we are challenged by new information from the outermost reaches of space. Using straightforward language, One Universe explores the physical principles that govern the workings of our own world so that we can appreciate how they operate in the cosmos around us. Bands of color in a sunlit crystal and the spectrum of starlight in giant telescopes, the arc of a hard-hit baseball and the orbit of the moon, traffic patterns on a freeway and the spiral arms in a galaxy full of stars — they’re all tied together in grand and simple ways.

“We can understand the vast cosmos in which we live by exploring three basic concepts: motion, matter, and energy. With these as a starting point, One Universe shows how the physical principles that operate in our kitchens and backyards are actually down-to-Earth versions of cosmic processes. The book then takes us to the limits of our knowledge, asking the ultimate questions about the origins and existence of life as we know it and where the universe came from — and where it is going.”


From the book jacket: “How was it that a single ‘genesis event’ could create billions of galaxies, black holes, stars and planets? How did atoms assemble — here on Earth, and perhaps in other worlds — into living beings that were intricate enough to ponder their own origins and purpose? What are the fundamental laws that govern our universe? This book introduces to a general readership for the first time new discoveries about, and remarkable insight into, these fundamental questions.

“There are profound connections between stars and atoms. In this accessible and highly original book, Martin Rees demonstrates how it is that just six numbers, imprinted in the ‘big bang’, determine the essential features of the physical cosmos. Moreover, cosmic evolution is astonishingly sensitive to the values of these numbers. If any one of them were ‘untuned’, there could be no stars and no life. This realization offers a radically new perspective on the universe and our place in it, and on the nature of physical laws.”


From the book jacket: “How can we understand and rise to the challenges of global environmental change? One clear answer is to understand the science of global change, not solely in terms of the processes that control changes in climate, the composition of the atmosphere, and biogeochemistry, but also in how ecosystems and human society interact with these processes and changes. Many research efforts have been launched, yet many opportunities for integration remain underexploited, and many fundamental questions remain about the links among human activities, current and future states of the global environment, and human welfare. This volume encourages a renewed commitment to understanding global change and sets a direction for research in the decade ahead. Through case studies the book explores what can be learned from the lessons of the past twenty years and what are the outstanding scientific questions, and what are the corresponding observational, monitoring and data needs. Highlights include: Research imperatives and strategies for investigators in the areas of atmospheric chemistry, climate, ecosystem studies, and human dimensions of global change; The context of climate change; Human responses to projected global change.”


From the book jacket: “With harrowing accounts of natural disasters, lucid explanations of the physics of the beach and coastal ecology, reports of unwise construction, and a clear-eyed elucidation of public policy and conservation issues, this book illustrates in rich detail the conflicting interests, short-term responses, and long-term imperatives that will shape the future of the American coast.”

From the book cover: “Demographers predict that world population will double to around 12 billion people during the first half of the twenty-first century and then begin to level off. Based on this scenario, Sustainable Development: The Challenge of Transition examines what societal changes must occur over the next generation to ensure a successful transition to sustainability. A successful transition must provide for the needs of these people within the constraints of the natural environment.

“An array of prominent authors presents a broad discussion of the dimensions of sustainable development: not just economic and environmental, but also spiritual and religious, corporate and social, scientific and political. Unlike other books on the subject, this volume provides insightful policy recommendations about how business, government, and individuals must change their current values, priorities, and behaviour to meet these challenges. These types of changes ordinarily take many decades to occur, so it is important to begin making them now, before the problems are overwhelming and more costly.”


This volume addresses the changing role of governments from observer to provider of financial compensation as a response to natural disasters.


From the Preface: “The revolution in information technology is changing access to information in fundamental ways. Increasing amounts of information are available in digital form; networks interconnect computers around the globe; and the World Wide Web provides a framework for access to a vast array of information, from favorite family recipes and newspaper articles to scholarly treatises and music, all available at the click of a mouse. Yet the same technologies that provide vastly enhanced access also raise difficult fundamental issues concerning intellectual property, because the technology that makes access so easy also greatly aids copying — both legal and illegal. As a result, many of the intellectual property rules and practices that evolved in the world of physical artefacts do not work well in the digital environment. The issues associated with computerization are also amplified by the rise of the Internet and broader and more pervasive networking.”

NEW EDITIONS, PAPER EDITIONS OR REPRINTS


The Pound is a biography of the rise and decline of the world’s most enduring currency. The story covers a thousand years.

From the book jacket: “In tenth century England the Angles, Saxons and Jutes needed to buy peace with the Viking invaders using something more impressive than sword blades. The solution, the famous Danegeld, meant reviving the old Roman practice of minting silver coins valued according to the weight of the precious metal they contained. Another wave of invaders, the Normans in 1066, brought with them the custom of imprinting their silver coinage with a star — in Norman French, an esterlin. The coins thus became known as little stars, starrings, or sterlings. The various weights used included the mark, the shilling, and the pound of sterlings.

“From these origins in the Dark Ages, the story of the pound is the story of Britain and her peoples — but it has also played a central role on the world’s stage. Britain’s currency was the first great international exchange currency, laying the foundations of the financial system that now makes world trade possible. It financed the voyages of Sir Francis Drake, opened up unexplored continents, and sent great armies across the globe.”


From the book jacket: “Discussing the most recent and pressing collisions between science and religion—such as the medical benefits of prayer, the human genome project, and cloning—Goldberg raises the timely question of what the appropriate role of religion might be in public life today. Tackling the legal aspects of religious debate, Goldberg suggests ways that religious leaders might confront new scientific developments in a more meaningful fashion.”


The author, a leading neurologist, presents a new and fascinating picture of the role of rationality in both evolution and daily consciousness.


From the book cover: “Gould sheds new light on a dilemma that has plagued thinking people since the Renaissance. Instead of choosing between science and religion, Gould asks, why not opt for a golden mean that accords dignity and distinction to each realm?”


GOVERNMENT PUBLICATIONS

COMMERCHE EXTÉRIEUR DU LUXEMBOURG. Bulletin du STATEC, Volume XXXXVI, No. 7. Luxembourg: Service Central de la Statistique et des Études Économiques, 1999, pp. 27, LUF150.00/EURO3.72 per issue / LUF900.00/EURO22.31 Annual Subscription: 8 issues.


MODUX — MODÈLE ÉCONOMÉTRIQUE DU STATEC. Bulletin du STATEC, Volume XXXXVII, No. 2. Luxembourg: Service Central de la Statistique et des Études Économiques, 2000, pp. 42, LUF150.00/EURO3.72 per issue / LUF900.00/EURO22.31 Annual Subscription: 8 issues.


UNITED NATIONS STATISTICAL OFFICE PUBLICATIONS RECENTLY ISSUED


BOOKS RECEIVED


SCAN STATISTICS AND APPLICATIONS. J. Glaz and N. Balakrishnan (Eds.). Boston: Birkhäuser, 1999, pp. xxi + 324, SF138.00/DM168.00/OSch1227.00.

SECURITY MARKET IMPERFECTIONS IN WORLDWIDE EQUITY MARKETS. D.B. Keim and W.T. Ziemba (Eds.). Cambridge University Press, 2000, pp. xxvii + 531, £60.00/US$95.00.


