R&D AND PRODUCTIVITY. The Econometric Evidence. 

Contents:
1. Introduction
PART I: The Conceptual Framework
2. Issues in assessing the contribution of research and development to productivity growth [1979]
PART II: R&D and Productivity at the Firm Level: The Evidence
3. Returns to research and development expenditures in the private sector [1980]
4. Productivity, R&D and basic research at the firm level in the 1970s [1986]
5. Productivity and R&D at the firm level [1984]
6. Productivity growth and R&D at the business level: Results from the PIMS database [1984]
PART III: R&D and Productivity at the Industrial Level
9. R&D productivity growth at the industry level: Is there still a relationship? [1984]
10. Interindustry technology flows and productivity growth: A re-examination [1984]
11. The search for R&D spillovers [1992]
12. R&D and productivity: The unfinished business [1996]
PART IV: Patent Statistics
PART V: Interim Conclusions

Readership: Econometricians, productivity analysts, official statisticians and economic historians

This is a collection of papers [with dates in brackets] written by Zvi Griliches, and with colleagues, on the problem of relating productivity growth to research and development (R&D) expenditure in industry. With the introduction, it spans almost twenty years of work and draws upon works going back over forty years. The references provide an insight into the school that grew out of this work, and which continues to contribute. In keeping with its title, the papers deal with econometric estimates of production functions containing an R&D variable. However, like all good research problems, the book makes clear that, while privately funded basic R&D contributes to improved productivity, there is still work to be done. Some of that work is on patent statistics, which is surveyed.

A recurring theme is data and the difficulty of working with data from official statistical organizations. Quality adjustment in price indices is raised, with a plea that other technologically advanced industries have a price index based on hedonic regression methods like that introduced in the United States for the computer industry in 1986. The debate goes on, about price indices, about productivity and measuring it for service industries, and, about the role of R&D. This book provides a good introduction to the literature and is a reminder to researchers early in their career that one person can make a difference.

Statistics Canada
Ottawa, Canada
F.D. Gault


Contents:
1. Images and quantities
2. Visual and statistical thinking: Displays of evidence for making decisions
3. Explaining magic: Pictorial instructions and disinformation
4. The smallest effective difference
5. Parallelism: Repetition and change, comparison and surprise
6. Multiples in space and time
7. Visual confections: Juxtapositions from the ocean of the stream of the story

Readership: Statisticians, students, public policy-makers and laymen

This is the third in a series of beautiful, colourful and informative books by the author of The Visual Display of Quantitative Information [Short Book Reviews, Vol. 4, p. 1] and Envisioning Information [Short Book Reviews, Vol. 10, p. 41] . As with the other volumes, this one is a valuable source of information on interesting illustrations and points out what are good ones, cluttered ones, exceptional ones, etc. The second paragraph of the book sums up the contents very well: “This book describes design strategies—the proper arrangement in space and time of images, words, and numbers—for presenting information about motion, process, mechanism, cause and effect. These strategies are found again and again in portrayals of explanations, quite independent of the particular substantive content or technology of display.”

The present book, as the others, is full of illustrations. Two interesting ones, given at length in Chapter 2, describe the solution to the cholera epidemic in 1854 in London by John Snow, and the investigation into the explosion of the space shuttle, Challenger, in 1986. A profound statement by physicist Richard Feynman is quoted: “For a successful technology, reality must take precedence over public relations, for Nature cannot be
STATISTIQUES TÉORIQUES ET APPLIQUÉES: Tome 2.  
Inférence statistique à une et à deux dimensions.  
pp. 659, BFrs2,100.00 / FFrs350.00.

Table des Matières:
1. Le choix d’une méthode d’analyse statistique
2. Les conditions d’application des méthodes statistiques  
et l’examen initial des données
3. Les tests d’ajustement et de normalité et les observations aberrantes
4. Les transformations de variables
5. Les méthodes relatives à une ou deux proportions ou 
un ou deux pourcentages
6. Les tableaux de contingence
7. Les méthodes relatives à la dispersion
8. Les méthodes relatives à une ou deux moyennes
9. L’analyse de la variance à un critère de classification
10. L’analyse de la variance à deux critères de classification
11. L’analyse de la variance à trois et plus de trois critères de classification
12. Les comparaisons particulières et multiples de moyennes
13. Les méthodes relatives à la corrélation simple
14. Les méthodes relatives à la régression linéaire simple
15. La régression non linéaire simple et la modélisation
16. La régression multiple et la modèle linéaire général
17. L’analyse de la covariance

Lecteurs:  
Etudiants et enseignants dans de domaine  
et l’agronomie et de la biologie

Ce Tome 2 est une remise à jour du Volume 2 de  
l’ouvrage classique Théorie et méthodes statistique:  
applications agronomiques (1970) du même auteur. Les  
principales méthodes d’inférence statistique à une et à deux  
dimensions sont présentées dans une manière fondamentalement  
différente. Ce livre peut être utilisé à  
différents ‘plans de lecture’ ou ‘niveaux d’étude’. Il y a des  
centaines de références, ce qui permet d’aller plus loin dans  
de littérature. Aussi intéressant pour l’enseignement est le  
grand nombre d’exercices avec solutions et l’existence  
d’une adresse sur l’Internet afin d’obtenir d’autres  
informations.

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

US$49.75.

STATISTICAL CASE STUDIES. A Collaboration between  
Academe and Industry. R. Peck, L.D. Haugh and  
Statistical Association / Society for Industrial and Applied  

Contents:
1. Introduction
2. Setting the stage: Categories of misuses
3. Know the subject matter
4. Definitions
5. Quality of basic data
6. Graphics and presentations
7. Methodology: A brief overview
8. Faulty interpretation
9. Surveys and polls: Getting the data
10. Surveys and polls: Analyzing the data
11. The law of parsimony: Ockham’s razor
12. Thinking: Lack of forethought, lack of afterthought
13. Ectoplastistics
14. The body politic: Governments and politicians
15. Afterword

Readership: Anyone with a rudimentary knowledge of  
statistics

This is a collection of examples of defective statistical  
work arising in general from the misunderstandings of a naive or inexpert user. As might be  
predicted, the journalistic profession is responsible for many of the stupider and more obvious gaffes. A nice feature of  
the book is that the authors have managed to track down  
the original sources of some widely quoted but seriously  
incorrect statistics. The second edition updates much of  
the earlier material with contemporary examples and  
includes new misuses that have appeared in the interim.  
Although there are many revealing misuses quoted, the text  
is vitiated by a number of examples that lack punch; one  
sometimes has the feeling of anticlimax: the text leads the  
reader to expect some compelling transgression only to find  
the instance given is limp. This reviewer found the rather  
folky style distracting, although it may well appeal to  
others. Also credibility was not promoted by including  
characters such as Dr. K. Nowall and his nephew, a  
manager of a fast food store, Kenneth F. Capon.

Macquarie University  
Sydney, Australia  
J.R. Leslie

The benefits of cases, by W.C. Parr
Partnering for the future of the statistics profession, by  
R.L. Iman
1. Are the fish safe to eat? Assessing mercury levels in  
fish in Maine Lakes, by J.A. Hoeting and A.R. Olsen
2. Chemical array validation, by R. Reeve and  
F. Giesbrecht
3. Automating a manual telephone process, by  
J. Tubbs
4. Dissolution method equivalence, by R. Reeve and  
F. Giesbrecht
5. Comparison of hospital length of stay between two  
insurers for patients with paediatric asthma, by  
R.L. Houchens and N. Schoeps
6. Comparing nonsteroidal anti-inflammatory drugs with  
respect to stomach damage, by T. Filloon and  
J. Tubbs
7. Validating an assay of viral contamination, by L.I. Lin  
and W.R. Stephenson
9. Evaluation of sound to improve customer value, by J.R. Voit and E. Walker
10. Improving integrated circuit manufacture using a designed experiment, by V. Czitrom, J. Sniegoski and L.D. Haugh
11. Evaluating the effects of nonresponse and the number of response levels on survey samples, by R.K. Smidt and R. Tortora
12. Designing an experiment to obtain a target value in the chemical process industry, by M.C. Morrow, T. Kuczek and M.L. Abate
13. Investigating flight response of Pacific Brant to helicopters at Izembek Lagoon, Alaska by using logistic regression, by W.P. Erickson, T.G. Nick and D.H. Ward
15. A simplified simulation of the impact of environmental interference on measurement systems in an electrical components testing laboratory, by D.A. Fluharty, Y. Wang and J.D. Lynch
17. Modeling circuit board yields, by L. Denby, K. Kafadar and T. Land
18. Experimental design for process settings in aircraft manufacturing, by R.M. Sauter and R.V. Lenth
20. Data fusion and maintenance policies for continuous production processes, by N.D. Singpurwalla and J.N. Skwish

Readership: Teachers of statistics, especially of statistical consulting courses, students of statistics, statisticians, practitioners of statistics in business, industry and government

The case studies in this book are the work of twenty-two pairs of participants in the Collaboration Project, launched in 1995 with funding from the U.S. National Science Foundation. Each pair comprised an academic and someone from business, industry or government. The introductory essays by Parr and Iman argue effectively for the industry-academe collaboration and for the value of case studies in statistical education.

Three tables index the cases by the statistical methods which are applicable (twenty-four such), area of application, and levels of difficulty. While the format of case presentation is largely uniform throughout (introduction, background, questions of interest, data, analysis, references, notes to the instructor, and biographies of the authors), the level of detail within the sections varies widely from case to case. The quality of the writing is variable as well. The best cases are models of good statistical practice and of good pedagogy. On the other side of the ledger, in a case where the central issue is testing goodness of fit and where one of the stated objectives is “To provide students with a fundamental understanding of the statistical techniques necessary to deal with practical problems”, a test of normality is relegated to the press of a button in a statistical package. This does not lead to a “fundamental understanding” especially when the obvious approach (estimate the mean and variance, group, and calculate a chi-square statistic) produces the wrong P-value! The authors of this case neither describe the algorithm for computing the test statistic nor comment on whether the package uses the correct procedure. The reader must use a critical eye.

A comment for editors of future volumes of case studies (and I hope they will appear): the format of the present volume makes large-scale photocopying by the instructor almost unavoidable in a course where the students are expected to analyze the data and present results without having seen the sections on “Analysis” and “Notes to the Instructor”. Possible solutions might entail publishing separate student and instructor versions or including case background and instructions for students on the accompanying disks.

Despite the criticisms, the book provides a rich resource for teachers of statisticians and their students. I will be using it this term in a course on statistical consulting.

Queen's University
Kingston, Canada
J.T. Smith

CASE STUDIES IN ENVIRONMENTAL STATISTICS.
D. Nychka, W.W. Piegorsch and L.H. Cox (Eds.).

Contents:
3. Regional and temporal models for ozone along the Gulf Coast, by J.M. Davis, B.K. Eder and P. Bloomfield
4. Design of air-quality monitoring networks, by D. Nychka and N. Saltzman
5. Estimating trends in the atmospheric deposition of pollutants, by D. Holland
7. Categorical exposure-response regression analysis of toxicology experiments, by M. Xie and D. Simpson
8. Workshop: Statistical methods for combining environmental information, by L.H. Cox

By D. Nychka, P.D. Haaland, M.A. O’Connell and S. Ellner

APPENDIX B : DI, A Design Interface for Constructing and Analyzing Spatial Designs.
By N. Saltzman and D. Nychka

APPENDIX C : Workshops Sponsored Through the EPA/NISS Cooperative Agreement

APPENDIX D : Participating Scientists in the Cooperative Agreement

Readership: Researchers interested in environmental studies

The book consists of a few loosely connected papers (case studies) and each of them constitutes a separate chapter. The authors tried to balance a self-consistent description of the statistical techniques with actual environmental problems, and in most cases that resulted in the very sketchy description of both. The first two chapters present several rather mature statistical methods with occasional digression towards applications. Some of these methods are masked by the use of terms like
“parametric models”, “semi-parametric models”, “singular value decomposition” instead of “regression models”, “regression models with correlated observations”, “principal components analysis”. The very substantial chapter on design of monitoring networks gravitates to model-free approaches, which may work well for homogeneous regions. This chapter is complemented with an appendix on the corresponding software tools. The rest of the book has more applied character and describes a number of interesting applications.

Oak Ridge National Laboratory
Oak Ridge, U.S.A. V.V. Fedorov


Contents:
1. Stochastic spatial-temporal models for rain, by D.R. Cox and V.S. Isham
2. On scaling theories of space-time rainfall: Some recent results and open problems, by E. Foufoula-Georgiou
3. Modelling of drop-size distribution and its applications to rainfall measurements from radars, by M. Porra, D. Sempa Torres and J.D. Crutin
4. Spatial channel network models in hydrology, by B.M. Troutman and M.R. Kartinger
5. Some mathematical aspects of rainfall, landforms and floods, by V.K. Gupta and E.C. Waymire

APPENDIX A : Efficient extraction of river networks and hydrologic measurements from digital elevation data, by S.D. Perkham

Readership: Statisticians, researchers in hydrology

This book starts with a concise overview of modelling philosophy, parameter estimation and fitting results in hierarchical (Poisson-cluster) approaches to rainfall modelling. The scaling approach is then given a clear presentation focussing upon wavelet transform analysis of time-series and links between spatial scaling characteristics and physical parameterizations. A wide-ranging discussion of approaches to river basin network modelling is followed by an innovative mathematical framework to the modelling of the hydrological cycle based upon a general difference equation of mass conservation and integrating (multi-)scaling approaches to rainfall, networks and peak flows. The measurement problem is also reviewed with a paper addressing the important issue of drop-size distribution underpinning the use of radar data and another explaining the use and scope of digital elevation model data in hydrology. This book thus presents an exciting review of developments in stochastic hydrology (with a helpful index) and includes many useful references.

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


Contents:
1. Introduction
2. Active shape models
3. Spline curves
4. Shape-space models
5. Image processing techniques for feature location
6. Fitting spline templates
7. Pose recovery
8. Probabilistic models of shape
9. Dynamical models
10. Dynamic contour tracking
11. Learning motion
12. Non-Gaussian models and random sampling algorithms

APPENDIX A : Mathematical
APPENDIX B : Stochastic Dynamical
APPENDIX C : Further Shape-Space Models

Readership: Undergraduate and graduate students, researchers in computer graphics and statistics

The theory of computer vision has set its sights on the ambitious goal of designing machines that can interpret objects within an image in the way that human vision can organize and interpret a retinal image. Because interpreting an image involves the extraction of information from a noisy picture, the use of statistical methods for the fitting of deformable templates has become standard. The “active contours” of the title of this book are simplified curves that can be moved around an image to highlight its important one-dimensional features, such as the line of a mouth or eyebrows. Of primary interest is the encoding of shape information through a shape space, which is not to be identified with the shape spaces of D.G. Kendall and other authors.

This lovely book finds a pleasant balance between exposition and technical detail, and can be read by the advanced undergraduate. A key feature is the addition of a supporting website at http://www.robots.ox.ac.uk/~contours/ which offers MPEG movies of the dynamic feature of the algorithms. You can watch the active contours track a moving image of a head among other things. Seeing is believing.

University of Waterloo
Waterloo, Canada


Contents:
1. Introduction
2. Preliminaries: Size measures and shape coordinates
3. Preliminaries: Planar Procrustes analysis
4. Shape space and distances
5. General Procrustes methods
6. Shape models for two-dimensional data
7. Tangent space inference
8. Size-and-shape
9. Distributions for higher dimensions
10. Deformations and describing shape change
11. Shape in images
12. Additional topics

Readership: Statisticians, applied researchers

Size and shape have long been key concepts in biology, and quantitative developments have ranged from D’Arcy Thompson’s classic work on transformation grids to modern methods of allometry and morphometry. Fresh impetus was provided in the 1970s and 1980s through...
pioneering work by Fred Bookstein and David Kendall which used “landmarks”, i.e. key points of correspondence located on each object, as a basis for quantifying shape. Shape being invariant under translation, rotation and reflection of the object, Procrustes analysis on their landmarks underlies the measurement of “distance” between two shapes. This leads on to the definition of a variety of shape spaces, with their concomitant properties, and shape models for (predominantly two-dimensional) landmark data. Inferential techniques then come from adaptations of multivariate methods to these spaces and models. The resultant methodology involves mathematics of considerable sophistication, including complex analysis and differential geometry, but is of great practical value.

The authors of this book have themselves contributed substantially to the topic, and now provide a comprehensive, logical and lucid exposition of all the main features. It is an invaluable source of information for anyone interested in this fascinating area.

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

MULTIVARIATE TAXOMETRIC PROCEDURES:


Contents:
1. Introduction: Carving nature at its joints
2. Defining nature’s joints: Alternative meanings of taxon
3. Mathematical foundations of multivariate taxometrics
4. MAXEIG-HITMAX: A multivariate generalization of MAXCOV
5. Factor-analytic techniques for distinguishing types from continua: L-Mode
6. Factor-analytic techniques for distinguishing types from continua: Q-factor analysis
7. Taxometrics in scientific methodology

APPENDIX A : The Effect of Nuisance Covariance on L-Mode Parameter Estimates
APPENDIX B : MAXCOV, SCORMAX, COMB
APPENDIX C : MAXEIG-HITMAX
APPENDIX D : L-Mode

Readership: Professionals and practitioners in statistics, research methods, evaluation, measurement, survey research, sociology, psychology, education research, communication research, policy studies, management, public health and nursing

This book seeks to shed some light on attempts to distinguish between “categorical” and “dimensional” explanations, a distinction which has a long, and confused and controversial, history in psychology and psychiatry, as well as elsewhere. The core of the book is a presentation of methods for decomposing data into underlying classes or taxa. The discussion includes an elaboration of the MAXCOV method developed by Meehl—based on a decomposition of covariance analogous to the standard within and between decomposition of variance (Meehl’s grandly named “General Covariance Mixture Theorem”)—and the use of factor analysis to distinguish between types and continua. This core is preceded by some philosophical discussion on what taxa are and succeeded by a discussion of the role of taxometrics in scientific research. The appendices include S-Plus programs for the original methods described in the text.

It is a pity that the book does not present deeper and more critical discussion of the links to alternative approaches and schools of thought about the issues of “categorical” explanations. However, answering questions of the kind explored in this text necessitates multiple analyses, with the data being looked at in many different ways. The methods described here do add to the available tools.

The Open University Milton Keynes, U.K. D.J. Hand


Contents:
Introduction
1. Auxiliary results
2. First properties of estimators
3. Asymptotic expansions
4. Nonstandard problems
5. The change-point problems
6. Nonparametric estimation

Readership: Researchers and advanced postgraduate students in statistics and probability

Poisson process models are applied in numerous fields; the author discusses examples from nuclear medicine, optical detection, auditory electrophysiology, seismology and other areas of science. The most appropriate audience for this book is the theorist, however, interested in asymptotic properties of estimators. Supposing that the intensity function of an inhomogeneous Poisson process depends on a finite number of parameters, the author focuses on maximum likelihood, Bayes, and minimum distance estimators for these parameters. The asymptotics are considered in terms of expanding sample size, as well as “small sample” asymptotic series expansions of the estimators and their distribution functions. A particularly appealing aspect is the inclusion of results on nonstandard problems. These include misspecification of the parametric family for the intensity measure; nonidentifiability; and intensity functions with jumps. Nonparametric estimates are also discussed. Overall, the material is clear and nicely motivated; the coverage seems thorough and the results valuable.

University of Wisconsin Madison, U.S.A. M.K. Clayton


Contents:
0. Basic prerequisite knowledge
1. Fitting a straight line by least squares
2. Checking the straight line fit
3. Fitting straight lines: Special topics
4. Regression in matrix terms: Straight line case
5. The general regression situation
6. Extra sums of squares and tests for several parameters being zero
7. Serial correlation in the residuals and the Durbin-Watson test
8. More on checking fitted models
9. Multiple regression: Special topics
10. Bias in regression estimates, and expected values of mean squares and sums of squares
11. On worthwhile regressions, big F’s, and R²
12. Models containing functions of the predictors, including polynomial models
13. Transformation of the response variable
14. "Dummy" variables
15. Selecting the "Best" regression equations
16. Ill-conditioning in regression data
17. Ridge regression
18. Generalized linear models (GLIM)
19. Mixture ingredients as predictor variables
20. The geometry of least squares
21. More geometry of least squares
22. Orthogonal polynomials and summary data
23. Multiple regression applied to analysis of variance problems
24. An introduction to nonlinear estimation
25. Robust regression
26. Resampling procedures (Bootstrapping)

Readership: Statisticians, students and researchers, applied scientists

Now in its third edition, this book covers a wide range of regression techniques, leading the student from analyzing a straight-line fit using a pocket calculator through to modern regression techniques, including robust regression and resampling methods.

The book includes a useful diskette containing the data used throughout the text. There is a wide range of exercises with mostly full or partial solutions, in addition to some excellent true/false questions.

For users of regression analysis, either in teaching or for reference, one needs to look no further than this text.

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

MULTIVARIATE REDUCED-RANK REGRESSION

Contents:
1. Multivariate linear regression
2. Reduced-rank regression model
3. Reduced-rank regression models with two sets of regressors
4. Reduced-rank regression model with autoregressive errors
5. Multiple time series modeling with reduced ranks
6. The growth curve model and reduced-rank regression methods
7. Seemingly unrelated regression models with reduced ranks
8. Applications of reduced-rank regression in financial economics
9. Alternative procedures for analysis of multivariate regression models

Readership: Those familiar with basic matrix theory, plus at least limited exposure to multivariate statistics

This well-written and well-laid out monograph deals with multivariate \( m \) Y's depending on \( n \) X's) linear models which are of reduced rank, that is, use fewer parameters than \( mn \). In fact, for the model
\[
Y = CX + \epsilon, \text{ rank } (C) = r \leq \min(m, n)
\]
is initially assumed. Later, two sets of regressors are considered, one set with reduced rank parameters, one with full rank parameters, as well as the case where both sets have reduced ranks with distinct structures. Applications in the areas of time series, growth curves, economics and finance are subsequently discussed. Several numerical examples are presented to illustrate the analysis of multivariate data sets using reduced-rank methods. A seven-page final chapter sums up other and related approaches. There are two hundred and five references. The cover is soft-back but sturdy. This text is a must for the library and would be excellent for a seminar course.

University of Wisconsin
Madison, U.S.A.

EXPONENTIAL FAMILY NONLINEAR MODELS. B.C. Wei.

Contents:
1. Exponential family
2. Exponential family nonlinear models
3. Geometric framework
4. Some second order asymptotics
5. Confidence regions
6. Diagnostics and influence analysis
7. Extension

Readership: Those wishing to stretch beyond generalized linear models and nonlinear least squares model

The author of this inviting volume is based at China's Southeast University in Nanjing. The general models discussed here, which have both a link function and a general model form have generalized linear models and normal non-linear regression models as special cases. "This is a theoretical book." (Preface) Some data are discussed, however, but (annoyingly) one must look them up elsewhere; see, for example, pp. 27, 28, 111 and 120. The writing style is excellent and the presentation is very clear throughout. The book is a must for the library and a superb resource for seminar-type classes and researchers. This book is recommended.

University of Wisconsin
Madison, U.S.A.


Contents:
PART I : Comparing Partial Orders Among Stochastic Matrices
1. Introduction
2. Notation and definitions
3. Generalizations of classical channel comparisons
4. Degradation is the same as increasing density
5. Shannon's inclusion implies smaller capacity
6. A simple case: Matrices A and B have only two columns
7. Open problems

PART II : Divergence and Contraction Coefficients
1. Introduction, definitions, and notation
2. A generalization of an inequality of Dobrushin
3. The divergence
4. Divergence between images of measures via Markov kernels. Contraction coefficients
5. A particular case: At most countable spaces
6. Behaviour of \( \phi \rightarrow \eta(\mathbb{T}) \) for a fixed Markov kernel \( \mathbb{T} \)
7. Applications of global divergence to comparison of experiments
8. History of the problem

Readership: Mathematicians, scientists, engineers

The assessment of diversity, or mutual distance, between measures in ordered sets of probability measures is the subject of this book. The principal motivation comes from information theory where the sets of measures characterize a communication channel and, in broad terms, greater diversity among the measures leads to more informative outputs from similar inputs. PART I of the book, which is concerned with finite sets of measures, is due to all three of the named authors. PART II, which is concerned with arbitrary measurable spaces, is due to the third-named author.

The book begins with an introductory chapter in which a sketch is given of how the framework discussed in the book is of relevance to various applications in information theory, statistics, economics and population genetics. The remainder of the text focuses on mathematical details.

Australian National University
Canberra, Australia/
Columbia University
New York, U.S.A. C.C. Heyde


Contents:
1. Introduction
2. Inferential data analysis for simple experiments
3. One factor designs
4. One factor blocking designs
5. Factorial experimental designs
6. Hierarchical designs
7. Two-level factorial designs
8. Two-level fractional factorial designs
9. Two-level orthogonal arrays
10. Taguchi methods
11. Response-surface methods

Readership: Undergraduate students of statistics, engineers, experimental scientists

The layout of this book, which covers what may be termed standard experimental designs, makes it useful both as a textbook and as a reference for the practitioner. Mathematics is kept to a minimum and each design is illustrated by detailed example.

An attractive feature of this book is its emphasis on the complete process of design and analysis of experimental data. Starting from the initial protocol, which includes both the choice of design and sample size calculations, the authors take the reader through each step: the checking of the data before analysis begins; the writing of a SAS or Minitab program to obtain the ANOVA table and estimates of effects and contrasts; the checking of the model assumptions by diagnostic tests; to the final conclusions.

Data transformations or non-parametric tests are suggested to handle cases where the assumption of normality fails. Both fixed and random effects are discussed. A set of problems illustrates and amplifies the subject matter of each chapter.

A thoughtful chapter on Taguchi’s methods, while acknowledging the contribution his ideas have made by introducing experimentation into areas where it had never been used before, shows that equivalent and often better results can be achieved by classical methods of experimental design.

All in all, there is much to recommend in this book. However, this reviewer takes serious issue with the recommendation that the SAS “Type III Sums of Squares” is the preferred ANOVA table for the analysis of unbalanced factorial designs. This is an issue that should be debated much more vigorously by the statistical community at large. It is a pity to see such advice being given in a book, which on its other merits, is sure to be widely read and used.

University of Cape Town
Rondebosch, South Africa J.M. Juritz


Contents:
1. Introduction
2. Basic statistical concepts
3. Basic design consideration
4. Randomization and blinding
5. Designs for clinical trials
6. Classification of clinical trials
7. Analysis of continuous data
8. Analysis of categorical data
9. Censored data and interim analysis
10. Sample size determination
11. Issues in efficacy evaluation
12. Safety assessment

Readership: Clinical trial researchers

The back cover of this book describes it as a unique, unifying treatment for statistics and science in clinical trials and indicates that it integrates the statistical and clinical disciplines. The authors would appear to have experience in clinical trials, especially from the pharmaceutical perspective, and there is some reasonable discussion, from this perspective, of issues which arise in clinical trials.

Personally, I wonder if the book achieves one of its aims, that of minimizing the mathematics to make the statistical content accessible. The choice of statistical topics and the amount of material on some topics might also be questioned. The references are not comprehensive. For example, the book length treatment of cross-over trials by S.J. Senn [Cross-Over Trials in Clinical Research, Short Book Reviews, Vol. 13, p. 21] is not referenced, although there is considerable discussion of this type of trial.

A cursory read of the book identified many misprints and grammatical mistakes. For example, a definition of clinical trials given in the excellent book by Piantadosi as “an experiment testing medical treatments on human subjects” is mangled to “an experimental testing medical treatment on human subject” on the first page of this book.

In the section on Cox’s Proportional Hazard Model, the partial likelihood is described as being named partial because “it explicitly does not include the probabilities for subjects whose event times are censored”, implying that these subjects are ignored. Then there is some confused discussion about the effect of including an “interaction” between time and treatment results because
the authors rescale the time axis by subtracting 173 when the latest failure is at time 35. I wish more care had been taken in the production of this book.

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

APPLIED CATEGORICAL DATA ANALYSIS. C.T. Lee.

Contents:
1. Introduction
2. Two-way contingency tables
3. Loglinear models
4. Logistic regression models
5. Methods for matched data
6. Methods for count data
7. Transition from categorical to survival data

Readership: Graduate students in epidemiology and public health, biomedical research workers

The chapter headings show the breadth of coverage of this book, the subject matter of each meriting a book of its own. However, here the author’s intention is to give the bare outline of each method and show its relationship to others in the field. The book is intended for the training of workers in the health sciences. It is assumed that they will have had a course in basic statistical theory. The author knows exactly what statistical tools they will need in practice. As well as the all important odds ratio, special topics such as the receiver operating characteristic, ROC curve, attributable risks and cross-over designs are discussed in detail.

The text reads like a set of lecture notes, which makes it handy for quick reference. Each chapter begins with data for which a model is suggested, and the likelihood function given. Emphasis is strongly on tests of hypotheses about the parameters of the model and model selection. Surprisingly, apart from goodness-of-fit tests, regression diagnostics are not mentioned at all. Where applicable, the Mantel-Haenszel analysis of the same data is also shown. Fragments of computer code show how the analysis can be implemented with SAS. Numerical examples are given and a set of exercises is included with each chapter.

The book is marred by a large number of typographical errors, some in the computer code and, at times, the verbal interpretation of the analysis is not illuminating.

University of Cape Town
Rondebosch, South Africa J.M. Juritz

STATISTICAL METHODS FOR RELIABILITY DATA.

Contents:
1. Reliability concepts and reliability data
2. Models, censoring, and likelihood for failure-time data
3. Nonparametric estimation
4. Location-scale-based parametric distributions
5. Other parametric distributions
6. Probability plotting
7. Parametric likelihood fitting concepts: Exponential distribution
8. Maximum likelihood for log-location-scale distributions
9. Bootstrap confidence intervals
10. Planning life tests
11. Parametric maximum likelihood: Other models
12. Prediction of future random quantities
13. Degradation data, models, and data analysis
14. Introduction to the use of Bayesian methods for reliability data
15. System reliability concepts and methods
16. Analysis of repairable system and other recurrence data
17. Failure-time reliability analysis
18. Accelerated test regression analysis
19. Accelerated life tests
20. Planning accelerated life tests
21. Accelerated degradation tests
22. Case studies and further applications

Readership: Engineers and statisticians in industry, engineering and engineering-statistics students

This is a big, well-written, well-organized textbook for engineering statistics. It gives good coverage of the subject overall and is suitable for self-study because of the clarity and detail. Some particular features are as follows: a long list of failure time distributions is dealt with in Chapters 4 and 5; much detail of maximum likelihood, and associated large-sample methodology, is presented throughout; both censored and uncensored samples are treated; at the end of each chapter, except the last, graded exercises are given (but no answers, so they are presumably for class use); bibliographical notes follow each chapter; plenty of graphics appear, accomplished via Splus as are the computations (programs are said to be available on the Wiley website); many datasets are given for the reader to practise on. The elements of the Bayesian approach are described in one chapter, and the influence of the prior is investigated in an example in one other section. The rest of the book is mainly based on standard large-sample maximum likelihood theory.

Surrey University
Guildford, U.K. M.J. Crowder


Contents:
PART I : Nonmathematical Presentations
PART II : Mathematical Presentations
PART III : Personal Incomes and Firm Sizes
PART IV : The M 1963 Model for Price Variation
PART V : Beyond the M 1963

Readership: Anyone interested in the link between fractals, scaling and finance

An alternative title for this book would have been “Mandelbrot on Mandelbrot”. Let me be clear: I do not mean this in any negative sense. The author no doubt has made fundamental contributions to science in general, and economics in particular. His early ideas on using Lévy-stable and Pareto distributions for the modelling of return data, the importance on scaling and random time change and various other new ideas have been a constant source of inspiration for numerous researchers in economics. The book is mainly organized around various early research papers which are here reproduced and annotated by the author. Some new material is also introduced. The final product makes interesting reading, especially from a historical perspective. Whereas some ideas may be well accepted by now, it is always interesting to hear from one of
the early contributors to the field how people reacted to these ideas early on.

ETH-Zürich
Zürich, Switzerland


Contents:
1. A Brownian model of financial market
2. Contingent claim valuation in a complete market
3. Single-agent consumption and investment
4. Equilibrium in a complete market
5. Contingent claims in incomplete markets
6. Constrained consumption and investment

Readership: Mathematically mature students and researchers interested in finance

This book is the sequel to the very successful Brownian Motion and Stochastic Calculus (BMSC) by the same authors [Short Book Reviews, Vol. 8, p. 45]. This indicates that the mathematical level is rather high. Those who have read BMSC, however, know the authors’ excellent pedagogic qualities in presenting difficult material to a broader audience. The present book keeps up with the high standards set in BMSC. As was to be expected from experts in the field, the authors go beyond the classical “plain vanilla” models and questions by introducing portfolio constraints, consumption and investment, transaction costs. This both in an individual agent set-up as well as in an equilibrium model. A special novelty is the detailed discussion in Chapter 5 on incomplete markets. The book contains numerous examples, very detailed notes and up-to-date referencing to over six hundred and fifty items. A scholarly work indeed! No doubt this text deserves its rightful place in the list of classic texts on the subject of mathematical finance.

ETH-Zürich
Zürich, Switzerland


Contents:
PART I : Statistical Theory
1. Distribution theory
2. Estimation
3. Significance tests
4. Sequential methods
5. Reliability and survival analysis
6. Goodness-of-fit
7. Compound laws and mixtures

PART II : Applications
A. Actuarial science
B. Analysis of reciprocals
C. Demography
D. Histomorphometry
E. Electrical networks
F. Hydrology
G. Life tests
H. Management science
I. Meteorology
J. Mental health
K. Physiology
L. Remote sensing
M. Traffic noise intensity
N. Market research
O. Regression
P. Slug length in pipelines
Q. Ecology
R. Entomology
S. Small area estimation
T. CUSUM
U. Plutonium estimation

Readership: Applied statisticians, research workers in areas such as biology, environmental science, engineering, management science, quality control, survival studies


PART I covers the core theory with plenty of illustrative examples; most of this will be accessible to non-specialists in statistics.

PART II is the overwhelming reason why this book should join the two books already mentioned on the bookshelves of all scientific research institutes and university departments. It is very wide-ranging indeed, both in types of application and in areas of application; this reflects the very considerable growth of interest in the distribution in the past ten years.

The author has succeeded in including in the bibliography almost all the latest work on the distribution, theoretical as well as applied.

University of St. Andrews
St. Andrews, U.K.
A.W. Kemp

RANDOM NUMBER GENERATION AND MONTE CARLO METHODS. J.E. Gentle. New York: Springer-Verlag, 1998, pp xiv + 247, DM114.000 / £44.00 / ÖS833.00 / SwFr104.00.

Contents:
1. Simulating random numbers from a uniform distribution
2. Transformation of uniform deviates: General methods
3. Simulating random numbers from specific distributions
4. Generation of random samples and permutations
5. Monte Carlo methods
6. Quality of random number generators
7. Software for random number generation
8. Monte Carlo studies in statistics

Readership: Statisticians and others who use Monte Carlo methods

This book investigates Monte Carlo methods from a more statistical viewpoint than many of its competitors. As a result, in addition to the usual chapters on uniform and non-uniform random number generation and variance reduction, there is a refreshing chapter on the design and analysis of Monte Carlo studies in statistics, some discussion of alternatives to crude simulation through pseudo-random numbers such as Latin hypercube sampling and quasirandom numbers, and a bibliography that includes references to the World Wide Web. This is an excellent and readable text for undergraduates in the mathematical or statistical sciences. There is little discussion on validation of simulation models, software (other than Splus and IMSL) or output analysis and as such, it complements but does not
Interest in copulas has increased markedly in the last decade; hence this monograph is a welcome addition to the literature. Copulas may be viewed as multivariate distribution functions with uniform $(0,1)$ marginals or as functions that join multivariate distribution functions to their one-dimensional marginals. Their main interest to statisticians lies in the construction and simulation of multivariate distributions and in the study of scale-free measures of dependence. The monograph provides a systematic mathematical development of the fundamental properties of copulas and their main applications. Bivariate situations dominate the exposition but each of Chapters 2-5 ends with a multivariate section. There are roughly 100 examples, 150 exercises, and a bibliography of nearly 180 items. This book is introductory but not elementary. In order to benefit from it the reader needs a thorough knowledge of upper-level undergraduate probability and mathematical statistics (measure-theoretic probability is not a requisite). Some familiarity with nonparametric statistics is also helpful.

University of St. Andrews
St. Andrews, U.K. C.D. Kemp

The book will be of most value to researchers already experienced in image processing. Novices will not find it easy to follow without the computational support. The sections on noise modeling would have benefited from a statistician’s eye prior to publication. Inconsistencies in the notation makes it difficult to distinguish between random variables and their values. Probability density functions are called probabilities; bias is the estimated mean divided by the true mean. Yet, for all this lack of clarity in the writing, the book leaves no doubt that the authors understand the statistical techniques being described.

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


Contents:
1. Brownian motion and stochastic integrals
2. Stochastic differential equations
3. Linear stochastic differential equations
4. Stability of stochastic differential equations
5. Stochastic functional differential equations
6. Stochastic equations of neural type
7. Backward stochastic differential equations
8. Stochastic oscillators
9. Applications in economics and finance
10. Stochastic neural networks

Readership: Probabilists, financial engineers

The book contains the Brownian motion theory of stochastic integration. In this respect it does not differ from the many textbooks on the topic. This book also contains the usually omitted, backward stochastic equations and quasi-linear partial differential equations. The applications to finance are the standard ones; optional stopping time problems are part of the same chapter. The reader will find the book interesting, especially because of the less known applications to stability and neural networks.

ETH-Zürich
Zürich, Switzerland F. Delbaen


Contents:
PART I : General Theorems on Ergodicity and Stability
1. General ergodicity and stability theorems for Harris irreducible Markov chains
2. Ergodicity and stability conditions for Markov chains not related to Harris irreducibility
3. Stochastically recursive sequences and their generalizations (Markov chains in random environments)
4. Ergodicity of stochastic processes in continuous and discrete time

PART II : Ergodicity and Stability of Multi-Dimensional Markov Chains and Markov Processes
5. Conditions of positive recurrence and ergodicity of multi-dimensional Markov chains and the method of Lyapunov functions
6. A description of multi-dimensional processes to be studied. Ergodicity, stability, and probabilities of large deviations of one-dimensional Markov chains
7. Ergodicity and stability of two-dimensional Markov chains and the method of approaching times
8. Markov chains in positive octants of three and more dimensions and the method of approaching times
9. Ergodicity and stability of multi-dimensional diffusions and jump Markov processes
10. Transition phenomena for one-dimensional Markov chains: Approximation of stationary distributions

PART II: Time Series

5. Risk management and quantile estimation, by F. Bassi, P. Embrechts and M. Kafetzaki
7. Inference for linear processes with stable noise, by M. Calder and R.A. Davis
8. On estimating the intensity of long-range dependence in finite and infinite variance time series, by M.S. Taqqu and V. Teverovsky
9. Why non-linearities can ruin the heavy-tailed modeler's day, by S.L. Resnick
10. Periodogram estimates from heavy-tailed data, by T. Mikosch
11. Bayesian inference for time-series with infinite variance stable innovations, by N. Ravishankar and Z. Qiu

PART III: Heavy-Tail Estimation

PART IV: Regression
15. Linear regression with stable disturbances, by J.H. McCulloch

PART V: Signal Processing
17. Statistical modelling and receiver design for multi-user communication networks, by G.A. Tsihrintzis

PART VI: Model Structures
18. Subexponential distributions, by C.M. Goldie and C. Klueppelberg
19. Structure and stationary stable processes, by J. Rosinski
20. Tail behavior and some shot noise processes, by G. Samorodnitsky

PART VII: Numerical Procedures
22. Table of the maximally-skewed stable distribution, by J.H. McCulloch and D.B. Panton
23. Multivariate stable distributions: Approximation, estimation, simulation and identification, by J.P. Nolan
24. Univariate stable distributions: Parameterization and software, by J.P. Nolan

Readership: Researchers in probability and stochastic processes

Ergodic theorems deal with convergence, when time tends to infinity, to a stationary limit that is independent of the initial conditions of the stochastic process. If this stationary limit is not very sensitive to small changes of the local characteristics of the process, we talk about stability. In this book, ergodicity is studied for various classes of stochastic processes such as Markov chains, stochastically recursive sequences, Markov chains in random environment, vector-valued Markov processes, etc. The applications are in the area of queuing and communication networks. This book provides a second treatment of the subject which will be appreciated by the researchers in this field.

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


Contents:
PART I: Applications
1. Heavy-tailed probability distributions in the world-wide web, by M.E. Crovella, M.S. Taqqu and A. Bestavros
2. Self-similarity and heavy tails: Structural modeling of network traffic, by W. Willinger, V. Paxson and M.S. Taqqu
4. Stable paretian modeling in finance: Some empirical and theoretical aspects, by S. Mittnik, S.T. Rachev and M.S. Paolella
5. Risk management and quantile estimation, by F. Bassi, P. Embrechts and M. Kafetzaki

PART II: Time Series
7. Inference for linear processes with stable noise, by M. Calder and R.A. Davis
8. On estimating the intensity of long-range dependence in finite and infinite variance time series, by M.S. Taqqu and V. Teverovsky
9. Why non-linearities can ruin the heavy-tailed modeler’s day, by S.L. Resnick
10. Periodogram estimates from heavy-tailed data, by T. Mikosch
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20. Tail behavior and some shot noise processes, by G. Samorodnitsky

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23. Multivariate stable distributions: Approximation, estimation, simulation and identification, by J.P. Nolan
24. Univariate stable distributions: Parameterization and software, by J.P. Nolan

Readership: Anyone interested in the heavy-tail phenomenon

This collection, directed to the “general practitioner”, grew out of a workshop in Santa Barbara in December 1995. It is primarily concerned with techniques of data analysis, although, as the contents indicate, much else is here. The volume is a pleasant, readable, less technical, complement to the 1994 monograph Stable Non-Gaussian Random Processes, by Samorodnitsky and Taqqu [Short Book Reviews, Vol. 15, p. 9]. The enthusiasm of this group for heavy tails as a community enterprise is conveyed through the happy tone of this tome.

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


Contents:
1. Introduction
2. Basic distributional results
3. Moment relations, bounds and approximations
4. Characterizations
5. Inference
6. General record models
7. Random and point process record models
8. Higher dimensional problems

Readership: Postgraduate students in statistics and mathematics, research workers in meteorology, hydrology, market analysis, and sports analysts
Here is a lively survey of the theory underlying sequences of record values and times, presented in the form of a textbook for a one-term postgraduate course but suitable also for self-study. It follows on from the authors’ *First Course in Order Statistics* [Short Book Reviews, Vol. 13, p. 5]. Familiarity with the earlier book would be useful but it is not necessary—the essential background demanded by the authors is a one-year course in introductory mathematical statistics, though some understanding of stochastic processes would be useful. There are plenty of exercises but no solutions: helpful references are given for some of the harder and the more thought-provoking exercises. The students’ attention and their understanding of the relationships between topics is greatly assisted by the user-friendly chapter introductions. For the exponential and geometric distributions, and their close relatives with lack-of-memory type properties, there are generally very simple results; a subset of the material in the book could very easily be adapted for the use of advanced undergraduates. In general, however, nice results are less easy to come by for records than for order statistics. A plan of feasible routes through the book would be useful in a subsequent printing.

University of St. Andrews
St. Andrews, U.K.
A.W. Kemp

**MULTIVARIATE QUALITY CONTROL. THEORY AND APPLICATIONS.** C. Fuchs and R.S. Kenett.

Contents:
1. Quality control with multivariate data
2. The multivariate normal distribution in quality control
3. Quality control with externally assigned targets
4. Quality control with internal targets—multivariate process capability studies
5. Quality control with targets from a reference sample
6. Analyzing data with multivariate control charts
7. Detection of out-of-control characteristics
8. The statistical tolerance regions approach
9. Multivariate quality control with units in batches
10. Applications of principal components
11. Additional graphical techniques for multivariate quality control
12. Implementing multivariate quality control

**APPENDIX 1 :** MINITAB™ Macros for Multivariate Quality Control
**APPENDIX 2 :** The Data from the Case Studies
**APPENDIX 3 :** Review of Matrix Algebra for Statistics with MINITAB™ Computations

Readership: Industrial practitioners of statistics, quality control, reliability, and manufacturing; and upper-level undergraduate and graduate students in these fields

This monograph is a practical introduction to the concepts and execution of multivariate quality control in industrial settings. Manufacturing data are naturally multivariate—yet to this day most reference books on quality control deal with only one variable at a time. Rapid advances in software have finally all but removed the computational barrier, the historical excuse for manufacturers’ reluctance to employ multivariate methods. The authors have included MINITAB™ macros that perform the methods described in the book. The book covers both standard and novel approaches, the latter including an interesting tolerance region approach for assessing individual multivariate observations. The book’s presentation is compact, and will require the reader to have some maturity in matrix algebra, statistical inference, and basic quality control. The book will make a nice supplementary text for advanced students, or a reference for seasoned practitioners.

Brookfield, Wisconsin,
U.S.A.
C.A. Fung

**LINEAR SEMI-INFINITE OPTIMIZATION.** M.A. Goberna and M.A. López.

Contents:
PART I : Modelling
1. Modelling with primal problem
2. Modelling with dual problem
PART II : Linear Semi-infinite Systems
3. Alternative theorems
4. Consistency
5. Geometry
6. Stability
PART III : Theory of Linear Semi-infinite Programming
7. Optimality
8. Duality
9. Extremality and boundedness
10. Stability and well-posedness
PART IV : Methods of Linear Semi-infinite Programming
11. Local reduction and discretization methods
12. Simplex-like and exchange methods

Readership: Mathematical programmers, mathematicians

A linear semi-infinite optimization problem has a linear objective function and linear constraints, however either the number of variables or the number of constraints but not both is infinite. This book is a research text—it comprehensively presents the theory of semi-infinite programming. The numerical methods to solve problems are given for general problems in conceptual form. There are no worked numerical examples. Every chapter has detailed bibliographical notes and a set of exercises with significant examples and counter-examples. Even the examples of modelling are presented in the most general fashion. Semi-infinite programming is a fascinating area with many challenges. If you want to be up-to-date on the theory in this field, then you will value this text highly; otherwise, if you want to formulate and solve problems, then access to a library will be sufficient.

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

**Peccavimus**

Vol. 18, No. 2, page 27. In the review of the book by K. Krickeberg, Chapter 11 is Chapter 12; the missing title of Chapter 11 is: Le modèle normal: Une ou deux populations.
THE CAMBRIDGE DICTIONARY OF STATISTICS.


This volume includes papers given at a symposium with the same name, held at Columbia University, New York, from October 2-6, 1995 and some other papers that were not presented at the symposium.


Since the first appearance of this book in 1985, stochastic calculus has undergone a considerable evolution both in theory as well as applications. The various editions of this classic have followed this evolution closely. The main novelty of this, the fifth, edition is the addition of a twelfth chapter on "Applications to Mathematical Finance". The author's word: "I found it natural to include this material as another major application of stochastic analysis, in view of the amazing development in this field during the last 10-20 years. Moreover, the close contact between the theoretical achievements and the applications in this area is striking."


The author examines the culture of American Colleges and universities and the purposes they serve.


The nine papers in the book are divided into three parts: 1. What does academic freedom protect; 2. The problem of hate speech; 3. The ethics of inquiry.


From the book cover: "Federal support for science and technology, after decades of growth, has been declining for several years and faces even deeper cuts as a result of future efforts to balance the budget. In this book, Kennet Brown assesses the likely consequences of tighter science budgets and suggests ways in which U.S. science can come to terms with downsizing.

"After discussing the traditional justifications for governmental support of science, the author analyzes their validity. What can we infer about a future in which the private sector will inevitably play a greater role in scientific research? he asks. The book focuses particularly on the effects of reduced support for research at universities and federal laboratories and considers ramifications for the future international standing of U.S. science."


From the book jacket: "The chemical industry has been one of the world’s best managed and most consistently successful business performers for 150 years. Now, drawing together fourteen of the most respected economists and industry experts, the editors of Chemicals and Long-Term Economic Growth present one of the most extensive studies of this industry in order to uncover the secrets behind this remarkable track record.

"With economic and managerial insights supported by specific real-world examples, this book shows how the development of the chemical industry can provide insights for achieving and sustaining economic growth. Scientists and business leaders in the chemical industry and many other technological fields, and economists generally, may benefit from the history and analysis presented in this book.

"This book examines: the role of science, innovation, technology, and organization in creating economic growth and profits; chemical industry growth in Germany, Britain, the United States, and Japan, including an analysis of relative strengths and weaknesses; the impact of macroeconomics, legal and financial institutions, corporate finance, and other policies and institutions on the behavior of chemical companies; the principle of comparative advantage—why certain industries excel in certain areas."


From the book cover: "...the author shows how the food industry threw away the ‘wisdom of the ages’ in the pursuit of profit and goes behind the scenes to show how the government failed time and again to protect the public interest.

"Having described these modern plagues and their causes, he offers advice on how to avoid them in a step-by-step guide to safe eating from the supermarket to the dining-room table. For everyone who is confused and anxious after more than a decade of food-poisoning scandals, this is the definitive guide to how those poisons got onto our plates... and how to keep them off our plates in the future."


From the book jacket: "[The author] probes the consequences of present social, economic, and environmental trends to construct three possible worlds that could await us in the 21st century: Market World, in which economic and human progress is driven by the liberating power of free markets and human initiative; Fortress World, in which unattended social and environmental problems diminish progress, dooming hundreds of millions of humans to lives of rising conflict and violence; and Transformed World, in which human ingenuity and compassion succeed..."
impossible on the prices of insurance policies.”


From the book jacket: “The first paper, on external financing and insurance cycles, contains a wealth of information on trends and patterns in the industry’s financial structure. The last essay, which compares performance of stock and mutual insurance companies, takes a fresh look at the way a company’s organizational structure affects its responses to different economic situations. Two papers focus on rate regulation in the auto insurance industry and provide broad overviews of the structure and economics of the insurance industry as a whole. This volume also considers the system of regulating companies in the United States, who insures the insurers, and the effects of tax law changes in the 1980s on the prices of insurance policies.”


From the book jacket: “What can we never do? The end of each century leads to a stocktaking of human achievement and our expectations about the future. This new book by John D. Barrow looks at what limits there might be to human discovery, and what we might find ultimately to be unknowable, undoable, or unthinkiable. Science is a big success story, but where will it end? And indeed, will it end? Weaving together a tapestry of surprises, Barrow explores the frontiers of knowledge. We find that the notion of ‘impossibility’ has played a striking role in our thinking. Surrealism, impossible figures, time travel, paradoxes, logic and perspective, theological speculation about Beings for whom nothing is impossible—all stimulate us to contemplate something more than what is.

“Why should we find anything impossible? We explore the limits that may be imposed upon a full understanding of the physical Universe by limits of technology, computers, cost, and complexity. We ask why it is that the process of biological evolution should have equipped us to understand the deep structure of the Universe. We see how the Universe’s structure prevents us from answering the deepest questions about its beginning, its structure, and its future. And finally, we delve into the deep limits imposed by the nature of knowledge itself. These deep limits have profound implications for any quest for complete knowledge. They take us into the debates over the problems of free will and consciousness. Gödel’s famous theorem about inability to capture the truths of mathematics by rules and axioms is explored to see if it has any implications for science. “This is no ordinary look at the limits of science. Using simple explanations, it shows the reader that impossibility is a deep and powerful notion; that any Universe complex enough to contain conscious beings will contain limits on what those beings can know about their Universe; that what we cannot know defines reality as surely as what we can know. Impossibility is a two-edged sword; it threatens the completeness of the scientific enterprise, yet without it, there would be no laws of Nature, no science, and no scientists.”


From the book jacket: “In the second millennium BC, Babylonian scribes assembled a vast collection of celestial omens, believed to be signs from the gods about the political, military, and agricultural fortune of kings and regional kingdoms. The importance of these omens, regularly consulted by advisors to Assyrian kings, was such that from the eight or seventh century until the first century, the scribes observed the heavens nightly and recorded the dates and locations of ominous phenomena of the moon and planets in relation to stars and constellations. These collections, first of omens and later of observations, form the earliest empirical science of ancient times and were the basis of the first and most important mathematical science of antiquity: mathematical astronomy. For the scribes discovered that phenomena such as heliacal risings and settings of planets, although highly irregular and sometimes concealed by bad weather, recur within limited periods of time and follow cycles in which the same phenomena are repeated on nearly the same dates of the calendar month and in nearly the same locations.

“Modern scholars have long struggled to understand the sophisticated workings of Babylonian astronomy and, in particular, how the scribes derived from observation the numerical parameters of their planetary theory. In this book, N.M. Swerdlow offers a groundbreaking solution to that problem. He examines here the collection and observation of ominous celestial phenomena and of how intervals of time, locations by zodiacal sign, and cycles in which the phenomena recur were used to develop a purely arithmetical planetary theory by which the same ominous phenomena that were regularly observed were reduced to computation, thereby surmounting the single greatest obstacle to observation: bad weather.”


From the book jacket: “With a true naturalist’s curiosity, Pielou explores the remarkable ways of water. As the world’s supply of clean, fresh water continues to dwindle, it becomes increasingly important that we understand the close connection between water and living forms.”


From the book jacket: “[The author] focuses on the interplay between the scientific and print revolutions and on their roles, both complementary and antagonistic, in the production and dissemination of knowledge. For while the advancement of knowledge depended on the accuracy and legitimacy of printed argument, print also could be—and sometimes was—used to manipulate those arguments and ideas for political, religious, or ideological reasons.

“Johns constructs an entirely original and vivid picture of print culture and its many arenas—commercial, intellectual, political, and individual. The Nature of the Book broadsides all of our assumptions about what books were at the genesis of print culture.”

From the book jacket: “During the 1980s and into this decade, U.S. businesses poured billions of dollars into computers and other information technology. Many commentators pointed to this computer revolution as a key factor in boosting economic growth and productivity. With the advent of the Information Superhighway, hopes for the future rose even higher. Yet, in the midst of rapid computerization in recent decades, the productivity performance of the U.S. economy has remained lackluster. And because of the tight link between improvements in productivity and a rise in living standards, whether and how much these new technologies will improve productivity will critically affect the nation’s future living standards. Policymakers, opinion leaders, and others, therefore, must understand the contribution of information technology to the economy.

“This book provides a straightforward guide to the economic issues behind the debates about the role of computers in the nation’s economy. To set the stage, Daniel Sichel reviews the essential facts about computers in the economy, with a particular emphasis on software. Using quantitative and historical analysis, supplemented by interviews with business leaders and other professionals, Sichel assesses the aggregate economic impact of computers in recent decades and looks ahead to their future impact.

“When compared with the size of the slowdown in productivity growth in the 1970s, he finds that recent contributions of computers to growth seem relatively modest. And, looking ahead, Sichel suggests it is doubtful that these contributions will surge in coming years. Thus, despite the importance of information technology, some caution is in order; computers may not be a magic bullet for productivity growth.”


From the book: “The title of this book is derived from the Cockney folk expression “as queer as a clockwork orange,” which means, in the words of author Anthony Burgess, “the queerest thing imaginable.” We take the folk expression to describe an entity that, although it appears ordered and natural on first inspection, is ultimately chaotic within. A secondary, anthropomorphic meaning has thrived since the appearance of Burgess’s horrific novel A Clockwork Orange, in which the human mechanism, organic but capable of brutal, robotic behaviour, is the clockwork orange. We intend the original folk meaning: The modern network, already vast but integral to an even vaster computer revolution, is a strange and chaotic thing, at the fringe of unimaginable, giving rise to profound problems of logic and responsibility.”

From the book jacket: “As the computer emerges as an elemental force in our society, the claims made for it grow more and more astonishing. Machine consciousness will be achieved; virtual reality will become so convincing you’ll literally forget you’re in an unreal world; computers in every classroom will revolutionize education. It’s becoming hard to tell where technology forecasting leaves off and hype begins.

“In a remarkably clear-eyed look at some of the major unexamined assumptions of our times, technologist Richard Crandall and philosopher Marvin Levich look at the ideas underlying the Information Revolution, with the belief that it is time for sharper scrutiny of a revolution that gives rise to profound problems of responsibility for computer users, educators, and designers.

“The six essays making up A Network Orange provide new views of such subjects as: Why market forces make your computer clumsy and inefficient; Why we must differentiate between machine intelligence and machine consciousness; Why the educational value of bulletin boards, chat rooms, and other network forums is essentially nil; Why the concept of virtual reality is fraught with logical absurdities.

“Lucid, penetrating, and relentlessly logical, A Network Orange is a much needed antidote to the dreamy hype surrounding so many aspects of modern computing.”


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