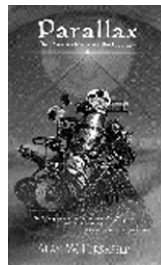


■ ANDREW RUPPEL, Feature Editor, McIntire School of Commerce, University of Virginia

## Taking the Measure of Things

Andrew Ruppel, Feature Editor

The blossoming of e-commerce, the attendant flurry of IPOs and M&A maneuvers, and the subsequent mystery of market gyrations have raised questions about valid business models. Dot-com entrepreneurs are quizzed routinely about the validity of their business models, especially in the face of blossoming technologies—and evaporating profits. Models are, of course, what the sciences are about. Building and testing models, and teasing useful results from them are what scientists do. In contrast to many entrepreneurs, scientists challenge the validity of their models persistently. The good ones aggressively plan and conduct carefully controlled measurement efforts to amass evidence against their models, usually hoping that they will survive in the process. We all can learn something from their efforts.



### **Parallax: The Race to Measure the Cosmos.**

By Alan W. Hirshfeld

W.H. Freeman, 2001,  
314 pages  
[www.amazon.com](http://www.amazon.com)

CONTINUING A LINE OF RECENT RELEASES IN SCIENCE HISTORY (such as Dava

Sobel's, *Longitude*), this is a well-written, authoritative account of attempts to measure how far away the stars are. Along the way, the author recounts the development of the earth-centered model of the universe and its difficult but eventual replacement by a sun-centered schema. In describing the attempts of various astronomers, such as Hooke, Herschel, and Bessel to get good measurements, Hirshfeld presents quite humane portraits of these individuals. Hirshfeld is a leading astronomer in his own right, with an enthusiasm reminiscent of Carl Sagan. The particular appeal of the book is its insight regarding the cleverness of astronomers and instrument makers as they attempted to make the ultimate measurement—the distance to the nearest star.

The parallax approach to measurement involves identifying a background reference point from which to measure the angular variation of a presumably closer object as it is viewed from different positions. The farther away an object is from the viewer, the more difficult it is to find

observational positions that subtend measurable acute angles to the far-away object. The extreme case is where the multiple sight lines to the object appear to be parallel—thereby implying the object is an infinite distance away. Complicating matters significantly are many optical and instrumental measurement issues. Light from the stars gets refracted into spectral components that lenses inadequately capture; temperature variations swell and shrink telescope components; multi-month waits for the next proper viewing time hamper consistent recording practices. The first to succeed in getting a true measurement, in the eyes of his peers, was Friedrich Bessel. His parallax value for the double star, 61 Cygni, was reported in 1838. He was closely followed in this achievement by two others: Wilhelm Struve and Thomas Henderson. Nowadays, parallax computations are automated, relying on computers and photographic images. Thousands of stars now have their stupendous distances from the Earth catalogued, along with their other properties.

The vastness of space revealed by the astronomers' efforts to measure stellar distances reminds one of the astonishment created by another W.H. Freeman publication, *Powers of Ten*, by Philip and Phylis Morrison. Through a sequence of creative images, *Powers of Ten* takes the reader on a fantastical visual voyage from the outer



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is a professor in the QM/MIS area at the University of Virginia's McIntire School of Commerce. His PhD is from the University of North Carolina. Dr. Ruppel has received faculty fellowships from the

American Society for Engineering Education and the American Assembly of Collegiate Schools of Business, and has served with NASA and the International Atomic Energy Agency (with diplomatic rank). He teaches in the areas of statistics and global business.

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reaches of deep space to the inner sub-sub-atomic level. (Readers will recognize the W.H. Freeman imprint as being linked to *Scientific American*, the oldest U.S. scientific magazine.)

The story of astronomy is one of overcoming one barrier after another to better measurement, only to discover yet another technical issue waiting to be resolved. One clearly needs patience as an astronomer. Stellar data reduction is replete with averaging and other correctional steps to compensate for the errors introduced by the vagaries of the equipment, the atmosphere, and the observer's setting. Decision scientists will benefit from studying the continual efforts of astronomers to get over the measurement hurdles to theory validation.



**Decision Modeling with Microsoft Excel, 6<sup>th</sup> ed.**

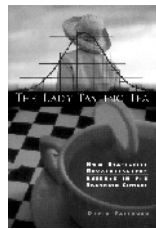
**By Moore, Weatherford, Eppen, Gould, and Schmidt**

Prentice Hall, 2001,  
703 pages  
[www.prenhall.com/moore](http://www.prenhall.com/moore)

ONE NOVEL ASPECT OF THIS EXPANDED UPDATE to a well-known text is the incorporation of additional chapters on an accompanying CD-ROM, which also includes numerous Excel add-ins and supplementary software packages. The basic text spans 11 chapters, grouped into four parts. There's the usual introductory material on models plus an expanded chapter on spreadsheet modeling. The next and largest section deals with optimization of deterministic models. Section three covers the stochastic topics of decision trees plus continuous and discrete simulation. The latter coverage is a useful addition to the text. A new concluding chapter on implementation precedes appendix material.

The accompanying CD-ROM includes: a chapter on multi-objective decision making, two chapters on forecasting and project

management, and one on queuing (which should have perhaps been included with the two simulation chapters). It would appear that the authors were trying to keep the book's physical page length down through the use of the CD-ROM. This goal might have been better pursued through reducing the amount of prose written. The text length, coupled with wide page margins, cramps the space available for displaying spreadsheet screen snapshots, of which there are some 500. The authors could have made these snapshots larger and used leaders and callouts on them to increase clarity and save prose. End-of chapter material includes a full array of recap, review, and practice materials. The inside of the cover includes a handy categorization of the examples by functional area. Very good QM cases are provided—12 new ones for this edition. Clearly this sixth edition has benefited from the legacy created by the original authors and the energy of the latest ones.



**The Lady Tasting Tea**  
**By David Salsburg**

W.H. Freeman, 2001,  
340 pages.  
[www.amazon.com](http://www.amazon.com)

THIS VOLUME DEALS WITH THE INTELLECTUAL BATTLE waged over two complementary ideas: the probability distribution and the hypothesis test. Both of these templates have, to quote the book's sub-title, "Revolutionized Science in the Twentieth Century." Author Salsburg seems dismayed by that fact. He feels that hypothesis testing has become distorted by its many, many current users. And he feels that the dominance of distributions in engineering and scientific thinking would benefit from a revolution of the kind that Thomas Kuhn felt was necessary for true scientific advance.

Salsburg is an industry-experienced statistician, ASA fellow, and university lecturer. His book is part memoir, part biography, part history, and part philosophy. This multi-faceted approach causes the text

to read somewhat disconnectedly over the course of its 29 chapters. Despite that shortcoming, this is a stimulating book and one that every person interested in statistics should read. It offers surprising insights to many famous statisticians, such as Karl Pearson, Jerzy Neyman, W. S. Gossett, and, of course, Sir Ronald Fisher. And it does so, surprisingly, without any recourse to formulas or graphs. This will be disappointing to some readers. The only illustrations in the book are photographs of individuals or events. Its main title refers to a lady who claimed she could tell which went into the cup first: the tea or the milk. This claim became part of a story associated with the famous Ronald Fisher—though he was not famous at the time of that afternoon tea. Fisher proposed a structured way—a way we now call a designed experiment—to see if her "effect" was real or simply something you could get by chance. (Unfortunately, we are not told the "rest of the tea story.")

For Fisher, p-values had meaning only in the context of controlled experiments that incorporated explicit randomization. Values less than .01 indicated an effect was at work. Values over .20 merely indicated that the effect was not detectable by an experiment of the size conducted. Anything in between .01 and .20 required designing a new experiment. Neyman was more concerned with the power of the hypothesis test and so wanted a very explicit alternative, not the catch-all, whatever-the-null-is-not that we see in today's textbooks. Neyman preferred to place confidence intervals on the location of distribution parameters, says Salsburg. Non-parametric and exploratory data analyses are also covered in the book, as is the role of women in advancing the field. For those who remember the pre-computer days, there are accounts of the tediousness of hand-cranked calculators. The end papers include a bibliography of over 125 items, a time line of events, and a rich index. While *The Lady Tasting Tea* is a "stats" book without "stats," statisticians will definitely find it a valuable read.

See **BOOKSHELF**, next page

## New Members Introduced

Joseph L. Katz, Executive Director

Alpha Iota Delta is the national honor society for the decision sciences and information systems. Founded almost 30 years ago, Alpha Iota Delta, was formed to confer distinction upon a very select group of collegians who have distinguished themselves in decision sciences and information systems curricula and who hold high promise for distinction in their future careers.

If you are interested in starting a chapter, or would like to contact the chapter sponsor at your school, please visit our web site at [www.alphaiota.org](http://www.alphaiota.org), or e-mail me at [jkatz@gsu.edu](mailto:jkatz@gsu.edu).

Congratulations to all the new members who were recently inducted into Alpha

Iota Delta. We are proud of your achievements. We await your future success.

### Baruch College

**Chapter Sponsor:** T. William Chien

**New Members:** Cindy A. Cruz, Lorraine Rivas, Milica Picuric, Katherine E. Vahey, and Elizabeth Vargas

### Miami University

**Chapter Sponsor:** Richard T. O'Connell

**New Members:** Aaron R. Bradley, Julie Ann Cron, Johanna B. Ferguson, Christine Gerlach, Sheryl Ann Jacobs, Craig Lyerly, Pamela A. Marks, Nicole M. Turner, and Alissa Werner

### Pace University

**Chapter Sponsor:** Chu-hua Kuei

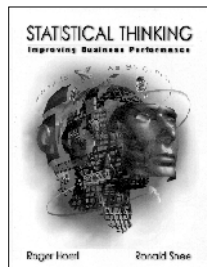
**New Members:** Lisa Arias, Chun H. Chan, Vincent Chen, Mimi Cheung, Lyubov Fomina, Janine Ilacqua, Alina May, Anthony Petrone, Vernessa Poole, Chun Qing Li, Sam Rogers, Pavel Tomashevsky, Amy Szeto, Linda Yip, and Jia Qi Zhang

### University of Florida

**Chapter Sponsor:** Patrick A. Thompson

**New Members:** Dalymar Berrios, Tirsha Blakeman, Todd Bright, Gregory Brown, Yuwen Chen, Matthew Dufek, Lauren Dutriell, Ling He, Reda Jalfi, Pamela Karr, Marc Maldoff, Benjamin McKeeby, Punita Patel, Amy Persampieri, Owais Pirzada, Jacob Prater, Melissa Robinson, Jamie Stone, Pablo Villamar, Archarin Viratkaphan, and David Yacek ■

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**Statistical Thinking: Improving Business Performance**  
By Hoerl and Snee  
Duxbury, 2002,  
526 pages.  
[www.duxbury.com](http://www.duxbury.com)

THIS TEXT REPRESENTS A SENSIBLE SHIFT IN THE TEACHING OF BUSINESS STATISTICS. It adopts a process model as the core framework and then looks to statistics to help improve business processes. There are chapters on problem-solving tools, statistical procedures, including experimental design, as well as on model building. Some of the treatment seems a bit cursory. For example, run charts are touted as a useful tool for detecting process changes, but the next step of using the test for runs in the data is overlooked. The authors have their own catch-label (SIPOC) for structuring a process situation, which is essentially as a supply chain. The front and back inside

covers have three flowcharts and a bullet-point list that provide summary frameworks of process and statistical thinking.

There are 10 chapters and 10 appendices—which expand on chapter topics, such as the six-sigma approach. Short introductions to Excel, Minitab, and JMP are included. In addition to end-of-chapter exercises, there are ‘milestone’ reminder sections regarding where the students should be in connection with a course project. This is a nice touch, but assumes that instructors are following the chapter sequence. As an instance of where they might not, data types are not discussed until Chapter 9—which covers the theory of statistical inference. The text includes some good worked-out business and non-business examples. The section on statistical methods seems to have a shade too much prose. It needs to move more in the direction of a handbook. More illustrative calculations and explicated software screen shots are needed. This book is on the right track, however. ■

### Online DSI Membership Directory Is Available to All DSI Members

Our membership directory is now online! To access this fully searchable directory, simply point your browser to

<http://decisionsciences.org/directory/auth.asp>

and log in using your email address and your membership number as password. If you do not remember your membership number, you can have the system send your password to you from the authentication page. If you have not registered an email address with us, you will have to contact us at [dsi@gsu.edu](mailto:dsi@gsu.edu) with your membership number and email address, and we will update your profile for you. Once you are logged in, you can also update your profile yourself.