



Randomness

By Deborah J. Bennett

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From the ancients' first readings of the innards of birds to your neighbor's last bout with the state lottery, humankind has put itself into the hands of chance. Today life itself may be at stake when probability comes into play--in the chance of a false negative in a medical test, in the reliability of DNA findings as legal evidence, or in the likelihood of passing on a deadly congenital disease--yet as few people as ever understand the odds. This book is aimed at the trouble with trying to learn about probability. A story of the misconceptions and difficulties civilization overcame in progressing toward probabilistic thinking, *Randomness* is also a skillful account of what makes the science of probability so daunting in our own day.

To acquire a (correct) intuition of chance is not easy to begin with, and moving from an intuitive sense to a formal notion of probability presents further problems. Author Deborah Bennett traces the path this process takes in an individual trying to come to grips with concepts of uncertainty and fairness, and also charts the parallel path by which societies have developed ideas about chance. Why, from ancient to modern times, have people resorted to chance in making decisions? Is a decision made by random choice "fair"? What role has gambling played in our understanding of chance? Why do some individuals and societies refuse to accept randomness at all? If understanding randomness is so important to probabilistic thinking, why do the experts disagree about what it really is? And why are our intuitions about chance almost always dead wrong?

Anyone who has puzzled over a probability conundrum is struck by the paradoxes and counterintuitive results that occur at a relatively simple level. Why this should be, and how it has been the case through the ages, for bumbler and brilliant mathematicians alike, is the entertaining and enlightening lesson of *Randomness*.

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Editorial Review

Amazon.com Review

"Chance governs all," said Milton, but he was writing about hell, not statistical probability. In the modern world, we assume that Milton's hell is everywhere--that is, that fate is best described in terms of statistics, odds, risks, and randomness. But most people, even many scientists, find probability difficult to understand and often counter to common sense. Mathematician Deborah Bennett looks at the history of statistics, games of chance and the casting of lots, the "Monty Hall" problem, and sources of random numbers. "Every day we can see evidence that the human species does not yet have a very highly developed probabilistic sense." With more books like Bennett's, we may in time become better at it--chances are. --*Mary Ellen Curtin*

From Library Journal

The big philosophical questions are, "Do unpredictable events really occur by chance or is chance a measure of our ignorance?" and, "Does it matter which it is?" The practical question is, "How do you use a computer to systematically produce 'random' numbers, for use in certain applications?" In this easy-to-read exposition, Bennett (mathematics, Jersey City State Coll.) touches on these questions as well as some history of society's interpretation of chance and its relationship to religious beliefs. The descriptions of the methodology of certain statisticians near the turn of the century is particularly noteworthy. Unfortunately, in making the material accessible to the lay reader, many of the interesting arguments and examples are either omitted or touched on too lightly. In particular, some of the mathematics might have been discussed in greater depth. This very short book would have been better had it been longer. ?Harold D. Shane, Baruch College, CUNY Copyright 1998 Reed Business Information, Inc.

From Kirkus Reviews

Probabilities and statistics dominate our lives, yet few of us really understand them; here's an attempt to shed some light. Bennett (Mathematics/Jersey City State Coll.) uses practical examples to convey the history and nature of her subject. Ancient societies used dice or bones not only for gambling but to decide matters of life and death on the theory that a random mechanism made the divine will known, without human bias. Old Testament Hebrews drew lots to divide an inheritance hence the term "lot" for a parcel of land. The I Ching is a more elaborate method of using randomizers (tossed coins or counted yarrow stalks) to solicit divine guidance. A more scientific approach to probability began with the Renaissance; Galileo's writings about dice show awareness of the concept of equal probability. Bennett spends some time demonstrating the need for careful enumeration of all the possible outcomes in estimating probability. By the 18th century, the concept of random error led to scientists adopting the mean of a series of measurements as the best approach to accuracy. Laplace was the first to formulate the famous bell curve to describe the likely distribution of random events, a model rapidly adopted throughout the sciences. As the science of statistics matured, random numbers were generated as a tool for analyzing the randomness of natural phenomena. Eventually these investigations, often based on "randomly" chosen data such as the heights of convicts, yielded such statistical tools as the chi-square relationship, which often showed that the data were not as random as originally believed. It was not until the 20th century that the notion that yet undiscovered laws would allow exact prediction of all natural phenomena was abandoned by science and true randomness embraced most strikingly in the form of quantum mechanics and chaos theory. A clear and detailed examination of the role of pure chance, with fascinating historical asides. (32 illustrations, not seen) -- Copyright ©1998, Kirkus Associates, LP. All rights reserved.

Users Review

From reader reviews:

Michelle Johnson:

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Fabiola Gaylor:

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