Against the Gods – The Remarkable Story of Risk by Peter L. Bernstein

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Book Review by Ngiam Tong Yuen

This book on the evolution of risk management is a fascinating account of how human beings have lived with uncertainty from ancient times until now – from ascribing everything to the gods to the use of supercomputers to manipulate the vast quantity of data that we now have. Peter Bernstein's thesis of what separates the past from modern times is the mastery of risk: *the notion that the future is more than a whim of the gods and that men and women are not passive before nature.*

To support this thesis, Bernstein, an economic consultant, takes us on a journey through the history of mathematics and science. Who would have thought that the thread joins societies from the beginning of human civilization, the ancient Greeks and Romans, ancient India, Arabs, Islam, medieval Europe, colonial America and on to modern times. A shortcoming of Bernstein's history of early mathematics is the absence of China in his account. He would have had more to say if he had access to the same sources as Lam Lay Yong, a mathematics professor at NUS.

A modern well designed pharmaceutical plant - designed to eliminate risks to safety, health and the environment.

The story of modern mathematics in the West begins with Fibonacci (real name Leonardo Pisano from Pisa in modern day Italy) who wrote a book called *Liber Abaci (Book of the Abacus*) in 1202. Fibonacci had learnt his mathematics from the Arabs who had learnt it from the Indians who, as we now know from Dr. Lam, had learnt it from the Chinese. The most wonderful thing that Fibonacci introduced to Europe was the Arab-Hindu numbering system and the concept of the number zero. This numbering system liberated the Europeans from the straight-jacket of the Greeks and Romans. Fibonacci is remembered nowadays in the Fibonacci Series. Want to know what this is? See Pg. 26 to 28.

The development of mathematics and the physical sciences in Europe and later in America is filled with the names of brilliant multi-talented men – Luca Paccioli, Girolamo Cadano, Blaise Pascal and Pierre de Fermat who discovered probability theory, the Bernoulli tribe, the most famous of whom is Daniel Bernoulli, who postulated that it was impossible to separate probability and consequence (utility) in making a choice/ decision (1731), Abraham de Moivre who discovered normal distribution and the bell shaped curve (1733), John Graunt founder of statistics (1662), Edmund Halley (yes of the comet fame) who developed the first statistically sound annuity tables (1693), Francis Galton (1822-1911) who discovered regression to the mean, Lambert Adolphe Jacques Quetelet who influenced Galton, Frank Knight, John Maynard Keynes, John von Neumann (1903-1957) truly a multi-talented man; he made contributions in so many fields ranging from quantum mechanics, atomic physics, mathematics to digital computers, who together with Oskar Morgenstern wrote the classic book on game theory, *Theory of Games and Economic Behavior,* Harry Markowitz, 1990 Nobel Laureate in economics whose key insight is diversification in order to reduce variance, and Daniel Kahneman and Amos Tversky, two Israeli psychologists, who made discoveries about how people make choices in uncertain circumstances.

Even the application of the latest theories and the employment of the most powerful computers do not perfectly describe reality. Peter Bernstein believes that people should not reject numbers because of this reason. Rather numbers should be used to guide us because they are usually more reliable than intuition and hunch.

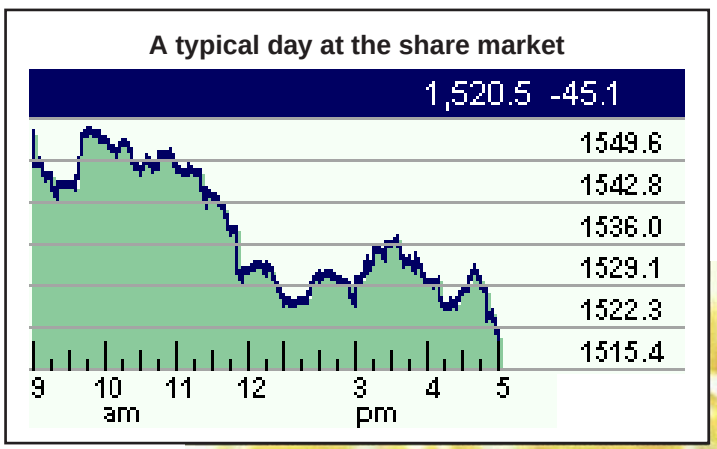
Why should loss prevention practitioners read this book? After all, Peter Bernstein is an economics and financial expert. His examples are mostly from these fields.

Loss prevention practitioners can approach this book from at least two angles.

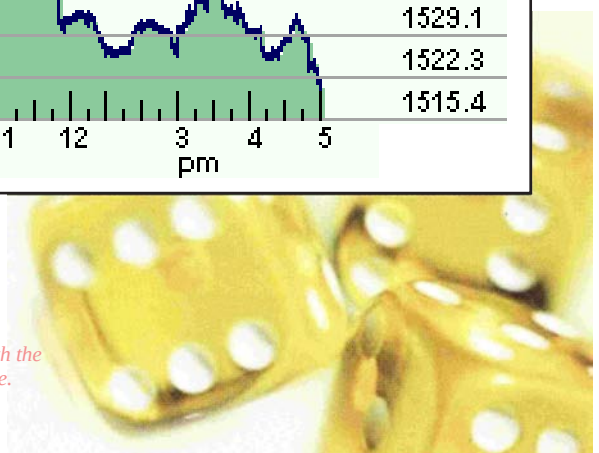
Firstly, as a citizen, the principles of risk management – probability, utility, risk aversion, loss aversion, variability, regression to the mean, failure of invariance, insurance, options and derivatives – may be profitably used or at least help to make sense of a chaotic world.

Secondly, as a loss prevention practitioner, you will profit from the application of the psychology of loss aversion. In fact, we are not risk averse. Everyday, we either consciously or unconsciously assess the risks around us and manage them by doing something to reduce the risk to an acceptable level. This means we are giving some attention to Bernoulli's utility and to the later concepts of others. We are also extremely conscious of the potential loss – our actions are guided by loss aversion. When we are training our employees, we have to be conscious of Kahneman and Tversky's discovery that people will take a gamble if the potential loss (bad consequence) is judged to be acceptable – remember the person who will walk over a pipe rack instead of using the walk way. How would you discourage this unsafe behavior? Punishment or reward? How would you train your Emergency Response Team? If you use quantitative risk analysis (QRA), you will know that QRA is replete with probability tables.

This is a book that is worth reading.



Uncertainties of the share market



Taking a chance with the throw of a set of dice.