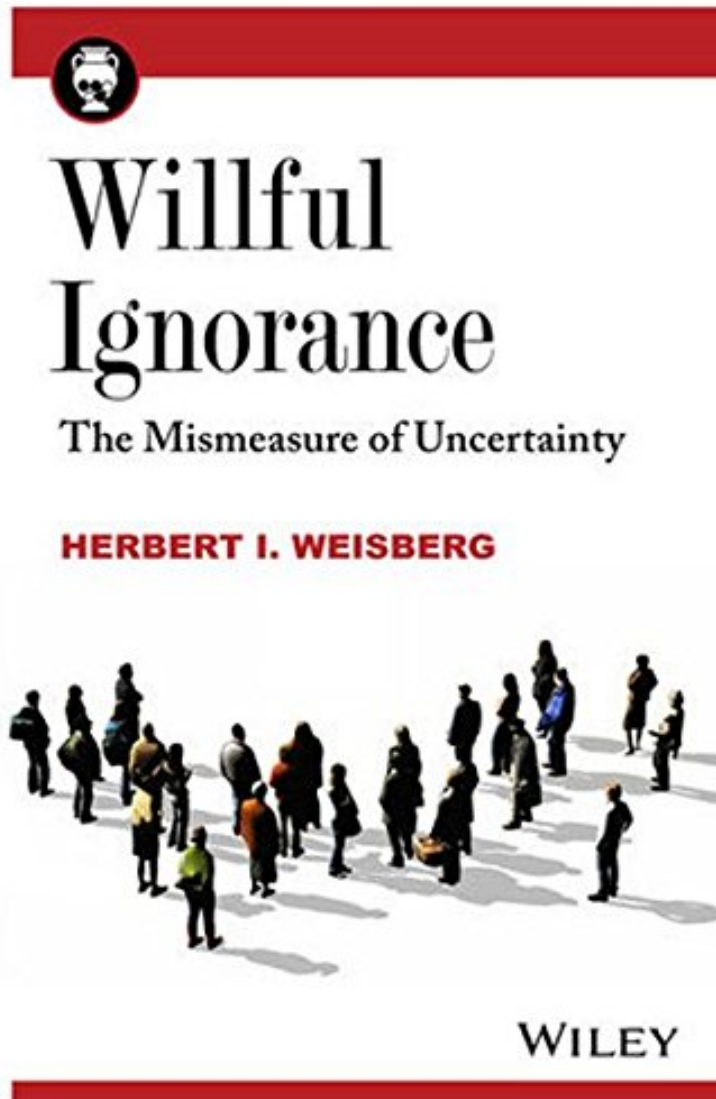


# Willful Ignorance: The Mismeasure of Uncertainty

*Dr. Herbert I. Weisberg*

*audiobook / \*ebooks / Download PDF / ePub / DOC*



#315455 in Books Weisberg Herbert I 2014-08-04Original language:EnglishPDF # 1 9.30 x .90 x 6.30l, .0  
#File Name: 0470890444452 pagesWillful Ignorance The Mismeasure of Uncertainty | File size: 20.Mb

**Dr. Herbert I. Weisberg : Willful Ignorance: The Mismeasure of Uncertainty** before purchasing it in order to gage whether or not it would be worth my time, and all praised Willful Ignorance: The Mismeasure of Uncertainty:

19 of 19 people found the following review helpful. A RevelationBy Lynne B. Hare, Ph.D.Willful Ignorance makes manifest the webs unintentionally woven by statistical practitioners to ensnare many technologies in mediocrity. With compelling clarity, Dr. Weisberg shows that blindly following main effect studies and relying on p-values alone have left many to wonder why they are not able to reproduce earlier results. The missing component is ambiguity, a fact that

might easily be unrecognized had not Dr. Weisberg guided us back to the very foundations of probability as first considered in 17th Century dialogue between Pascal and Fermat and then modified through the succeeding centuries by great minds such as the Bernoullis, DeMoivre, Bayes, Price and LaPlace, then into the more modern era of statistical thinking through contributions of such notables as Keynes, Fisher, Gossett, Neyman and Pearson. The Fisher and Neyman-Pearson split, namely building knowledge from continual iterations between synthesis and analysis and making decisions based on the knowledge gained, as opposed to guiding decisions on the basis of p-values, is the major divide. Intelligently researched and written, this book provides fundamentals of probability, its origins, its use and abuse. A careful reading can set us straight, remind us of our grounding, and force us to be more circumspect in our decision making.

2 of 2 people found the following review helpful. A charming and well conceived history of statistical thinking

By Arthur R. Silen

Herbert Weisberg's historical exploration of the roots and meaning of what we call 'Probability' should be on the desk (or on the professional bookshelf) of every undergraduate student, and every graduate student for whom knowledge of statistics and probability are necessary professional requirements. That would also include students at professional schools that include law, business administration, public administration, banking and finance, and every other professional discipline engaged in forecasting future events and trend-lines. In short, any job or profession whose practitioners are tasked with discovering the likelihood of future happenings.

I awarded Mr. Weisberg's treatise the customary 'five stars' denoting excellence; but I also rate books, and this would be one of them, on the basis of how many heavy-duty highlighters I consume in identifying significant passages within those books that I want to bookmark for future reference. In this case, Mr. Weisberg also earns my 'four-highlighter' designation simply on the basis of the wealth of information that he includes. On top of that, the book is eminently readable, and Mr. Weisberg is a thoroughly engaging storyteller as he walks the reader through the truly fascinating history of how we come to educate ourselves to the likelihood that certain kinds of events will, to a greater or lesser extent, happen at some future time.

The science of ascertaining and describing probabilities is really less than 500 years old. Neither classical Greece nor Imperial Rome were able to develop the type of thinking and intellectual inquiry that are necessary for even thinking about probabilities in the abstract, and then calculating the odds of something actually happening, to occur. For the Ancients, mathematics was all about geometry and Platonic ideals. Fast-forward a thousand years, and Arabic mathematicians built upon what the Ancients had begun, but by adding their own contribution mathematical thinking and practice, beginning with what we now call algebra.

Fast forward again another 500 years, we now have mathematical thinkers in France and elsewhere in Europe who were also inveterate gamblers. These men apparently spent most of their leisure time working to develop a coherent science of calculating gambling odds, whether through flipping coins or rolling dice in various multiples. Although gambling, per se, frequently met with social disapproval, for many of the well-to-do it was a guilty pleasure. And being avid competitors with one another (as well as being risk-averse) those brilliant minds went to work trying to figure out how to win consistently at betting. In this regard, the world has changed little from its Sixteenth Century counterpart.

As one might expect, that type of mathematical mental prowess was not confined to the gaming tables, and it certainly proved to be useful by Dutch merchants engaged in overseas trade who needed to hedge their risks in the form of ships lost at sea, along with their cargoes.

Using translations of original essays, treatises, and interpersonal letters, Mr. Weisberg walks the reader through the history of probabilistic thinking, showing how other developments in science and mathematics than being developed and refined in parallel with explorations into the laws of probability, eventually effectuated a convergence of the concepts of odds that something would happen with mathematics that could be used to calculate a numerical statement that could be used to show precisely what degree of potentiality existed for the event being examined to occur.

Mr. Weisberg goes on to show that mathematics made probabilistic thinking possible in today's world, and with huge success. That high level of success has all but supplanted the earlier notions of probability based upon the more ambiguous notions of likelihood that an event would occur, or not occur, and that mathematically-calculated probabilities are now being overused to the point that scientists are now achieving inconsistent results that cannot be replicated by subsequent researchers, which is essentially a negation of the scientific method.

All in all, Mr. Weisberg has done a thoroughly admirable job. My only comment, not to be overly critical in light of the overall excellence of his book, would be to suggest that many of the tools of behavioral economics, especially those regarding the identification and modulation of what are known as Heuristics and Biases are subjects for future exploration. If, as Mr. Weisberg suggests, mathematically-generated probabilities that are so important in STEM disciplines are markedly less effective in describing and predicting probabilities in the social sciences where inconsistent thinking and ambiguities abound, that is where future research ought to occur.

As a lawyer whose meacutetier was in negotiation and dispute resolution I would have to agree. Every settlement conference that I attended had the opposing lawyers throwing exaggerated or unsubstantiated probabilities dressed up as curve-balls at one another, hoping to bully or con the other side into thinking that they stood little or no chance of prevailing if the case went to trial. Entirely apart from that being a 'dialogue of the deaf', none of these people really knew what they were talking about. For the lawyers, it was an exercise in shamanism, a ritual that every trial lawyer goes through on the way to settlement, dramatic but wholly unedifying in the way it is practiced nowadays. As a mediator working to bring the opposing parties together, the legal profession's pervasive lack of understanding about statistics and probabilities made settlement negotiations all

the more difficult, especially where the research findings of Behavioral Economics have become widely known only in the last decade or two. Even where research findings in statistical probabilities have been publicized, assimilating that knowledge and understanding the assumptions implicit in applying that knowledge have been a long time in coming. Law school courses on the Rules of Evidence, likewise, have not kept up with research findings in behavioral psychology, particularly in the area of cognitive biases and judgment-making heuristics nowhere to be found in the law school curriculum. It seems rather odd that in a legal proceeding that is intended to determine the truth of the matter at hand based upon probabilities, i.e., that one party's version of the fact is more likely to be true than his opponent's, has nothing in the way of probabilistic thinking to support the fact-finding and legal argument that follow. This may be attributed to failures of imagination on the part of the trial bar and bench, and lawyers who skimp on pretrial discovery because the time and expense impact their bottom line. It also gives unfair advantage to institutional defendants who use their enormous databases to justify settlements based upon what they claim to be 'typical' or 'average' fact patterns. If we have learned anything over the last decade or two, it is that extreme random events do occur that confound every expectation. Used to be that judgments were made on the basis of one's life experience, or those of close neighbors, or others with whom we are constantly in contact. Nowadays, there are arguably more computers than there are people, and it is possible to create hypothetical scenarios that explore the 'what if's' that are the basis of probability studies. It is fashionable, indeed even de rigueur for a lawyer or someone in authority to declare that 'he could not imagine' an event happening that could cause the injuries suffered to occur, and yet it happens and with increasing regularity. Not only are outliers predictable, they are measurable. We need better teachers and training in probabilistic thinking. I have fervent hopes that Mr. Weisberg will eventually be able to lend his expertise to that effort. In the meantime, Mr. Weisberg's engaging and well-conceived book on how we measure, or mismeasure, uncertainty and evaluate ambiguities in any sort of situation are well worth reading, just for their own sake. I would even go so far as to say that his book is so accessible that even high school students would be able to read and understand it, despite the stresses and distractions they have to endure on a daily basis simply by being teenagers. I would love to have had it when I was in high school six decades ago. 8 of 8 people found the following review helpful. A terrific read that has changed the way I view the field of statistics. By Dave LeBlond I entered Chapter 1 of this book a confirmed Bayesian with my own preconceived notions about uncertainty. I exited chapter 12 somewhat embarrassed at my own naivety; wishing I could go back and edit passages I have written and presentations I have made over the years. I found the book very readable and filled with interesting new (to me) information about the elusive subject of uncertainty. Somehow Weisberg has made connections across many disciplines and provide a fresh perspective that should be required reading for every student, practitioner, or consumer of statistics. I also found the issues raised in the book highly motivating. It has caused me to question the way I apply statistical tools in my own narrow field (pharmaceutical CMC drug product development). For instance: Should risk assessment (e.g. FMEA) use probability metrics for occurrence and detection? Should I be more careful in soliciting prior distributions? Is it possible or even useful to quantify model uncertainty? Do p-values really serve my clients' needs? Should I blindly apply fractional factorial main effect experimental designs or read up on more recent designs that permit estimation of interactions? The history that Weisberg presents suggests (and I tend to agree) that we have made some wrong turns regarding the way we quantify uncertainty. I'm afraid... "... it will create much mischief before the mistake is recognized". (wish I could properly state reference this quote). The suggestions he makes in chapter 12 are also recommended reading for government policy makers charged with the responsibility to make risk based decisions in the face of uncertainty in the interest of the public..

An original account of willful ignorance and how this principle relates to modern probability and statistical methods. Through a series of colorful stories about great thinkers and the problems they chose to solve, the author traces the historical evolution of probability and explains how statistical methods have helped to propel scientific research. However, the past success of statistics has depended on vast, deliberate simplifications amounting to willful ignorance, and this very success now threatens future advances in medicine, the social sciences, and other fields. Limitations of existing methods result in frequent reversals of scientific findings and recommendations, to the consternation of both scientists and the lay public. Willful Ignorance: The Mismeasure of Uncertainty exposes the fallacy of regarding probability as the full measure of our uncertainty. The book explains how statistical methodology, though enormously productive and influential over the past century, is approaching a crisis. The deep and troubling divide between qualitative and quantitative modes of research, and between research and practice, are reflections of this underlying problem. The author outlines a path toward the re-engineering of data analysis to help close these gaps and accelerate scientific discovery. Willful Ignorance: The Mismeasure of Uncertainty presents essential information and novel ideas that should be of interest to anyone concerned about the future of scientific research. The book is especially pertinent for professionals in statistics and related fields, including practicing and research clinicians, biomedical and social science researchers, business leaders, and policy-makers.

Idquo; This volume is an outstanding example of the need to keep our scientific methods in context and the value of

careful historical research to provide this context. It should be a required part of the statistical training of every scientist. (Computing s, 24 March 2015) About the Author Herbert I. Weisberg, PhD, is Founder of Causalytics, LLC, which develops innovative technology for predictive analytics for both medical research and business applications. He was previously President of Correlation Research Inc., a consulting firm specializing in the application of statistics to various business and legal issues. A Fellow of the American Statistical Association, Dr. Weisberg has published numerous articles and two previous books related to applied statistics.